FACT SHEET FOR STATE WASTE DISCHARGE PERMIT ST-8033
KINROSS GOLD CORPORATION

INTRODUCTION

This fact sheet is a companion document to the draft State Waste Discharge Permit No. ST-8033 The Department of Ecology (the Department) is proposing to issue this permit, which will allow discharge of wastewater to waters of the State of Washington. This fact sheet explains the nature of the proposed discharge, the Department's decisions on limiting the pollutants in the wastewater, and the regulatory and technical bases for those decisions.

Washington State law (RCW 90.48.080 and 90.48.162) requires that a permit be issued before discharge of wastewater to waters of the state is allowed. Regulations adopted by the state include procedures for issuing permits (Chapter 173-216 WAC), and water quality criteria for ground waters (Chapter 173-200 WAC). They also establish requirements which are to be included in the permit.

This fact sheet and draft permit are available for review by interested persons as described in Appendix A--Public Involvement Information.

The fact sheet and draft permit have been reviewed by the Permittee. Errors and omissions identified in these reviews have been corrected before going to public notice. After the public comment period has closed, the Department will summarize the substantive comments and the response to each comment. The summary and response to comments will become part of the file on the permit and parties submitting comments will receive a copy of the Department's response. The fact sheet will not be revised. Changes to the permit will be addressed in Appendix D--Response to Comments.

GENERAL INFORMATION	
Applicant	Kinross Gold Corporation Kettle River Operations
Facility Address	363 Fish Hatchery Road Republic, WA 99166
Type of Facility	Gold and Silver Mining and Milling
Type of Treatment:	Lined Tailings Impoundment
Legal Description of Tailings Pond Area	Within the SW¼ of Section 26, Township 37 N., Range 33 E., Ferry County Latitude: 48º 40' 28" N. Longitude: 118º 36' 17" W.

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BACKGROUND INFORMATION

DESCRIPTION OF THE FACILITY

HISTORY

Kinross Gold Corporation operates a gold and silver mining and milling operation (Kettle River Project) in Ferry County near the Town of Republic (Figure 1). The Project commenced in 1989 and originally included the Key Mill and tailings disposal facility, and the Overlook and Kettle underground mine sites. Since that time, an additional three mines have gone into production: the Key Project (two adjacent open pits), the Lamefoot, and K2 mines (both underground). Currently, the Overlook, Kettle, Key Project, and Lamefoot mine sites are in the process of, or have completed, final reclamation. In the fall of 2002, the production at the K2 mine was suspended while exploration for additional reverses continued. The Key Mill and tailings disposal facility are currently on a care and maintenance program.

The Department holds two reclamation assurances for site activities. These include the reclamation requirements for the Key Mill tailings impoundment and the Lamefoot mine site. The site activities are also covered by the Department's sand & gravel and baseline general stormwater NPDES permits.

INDUSTRIAL PROCESSES

When in operation, mined ore is trucked from the mine sites to the Key Mill for processing. In the milling process, the ore is first crushed, then mixed with water and pulverized to form a slurry. The ground ore slurry is mixed with a cyanide solution and then pumped through a series of tanks containing activated carbon. The gold is leached from the ore and is adsorbed onto the carbon. The gold and silver are then stripped from the carbon using a hot caustic solution. The concentrated solution is sent to electrowining cells where the precious metals are electrolytically deposited onto steel wool cathodes. The cathodes are fire refined producing dore bars (containing both gold and silver). These dore bars are then trucked offsite for further refining.

The spent slurry remaining from the gold leaching process (tailings) is treated to destroy residual cyanide levels, then pumped to a 66 surface acre lined tailings pond. The tailings settle in the pond, and water is decanted off the surface and reused in processing. About 500,000 to 550,000 tons of ore are processed per year. In 2000, the operations produced 94,086 ounces of gold.

At the K2 site, ore is mined underground then transported by trucks to the surface. At the surface, the ore is stockpiled until it is loaded into haul trucks and transported about 20 miles to the Key Mill for processing. Waste rock from mining is placed in stockpiles above ground. At the K2 mine, mining is primarily conducted using a long hole open stoping technique with backfill. This method consists of drilling blast holes in the ore zone between existing mining levels. The holes are then blasted and the ore and any waste rock is removed from the lower level. Uncemented and cemented backfill is used to provide support within the mined out areas.

At K2, one source of the backfill material is from a gravel pit located above the mine. The gravel is dropped into the workings through a surface opening. Additionally, waste rock brought to the surface will also be used as backfill in the workings. Any water encountered during the

underground mining operations is either re-used as drilling fluid or pumped from the mine and transported to the Key Mill tailings pond for disposal.

TREATMENT PROCESSES/TAILINGS CONTAINMENT SYSTEM

Cyanide levels in the tailings pond poses a risk to migratory waterfowl. Residual cyanide contained in the tailings is treated prior to discharge to the impoundment via the patented INCO SO_2/Air destruction process. Cyanide is oxidized to insoluble cyanates by reaction with oxygen and SO_2 ($CN + SO_2 + O_2 \rightarrow CNO + H_2SO_4$). During the migratory bird season, hydrogen peroxide may also added to the tailings pond to further oxidize any residual cyanide.

The tailings pond (see Figure 2) is lined to contain process contaminates from entering ground water. The pond was originally constructed in 1989 with a single VLDPE (very low density polyethylene) liner. This first phase created a 60 acre impoundment with a dike height of 150 feet (tailings storage capacity of 2.49 million tons). An underdrain system was placed beneath the pond to intercept groundwater flows. This underdrain serves both to intercept groundwater and to detect any leaks that may occur in the liner system. Water collected by the underdrain is returned to the impoundment.

In 1992, the pond was expanded by adding a second 30 acre impoundment adjacent to the original. The second phase was lined with a VLDPE liner on top of a geosynthetic clay liner. An underdrain was also placed beneath this expansion. This addition created a storage capacity of 3.62 million tons of tailings. Then in 1995, the embankment was raised around the two ponds creating a single impoundment. The construction resulted in a 175 foot height embankment and a storage capacity of 6.76 million tons. The same two liner system (VLDPE liner on top of a geosynthetic clay liner) was also used for this phase.

In the fall of 2001, the permittee expanded the tailings impoundment with a 12 foot high, lined lift on the interior portions of the impoundment (upstream lift). This expansion increased tailings storage by 1.7 million tons (to a total of 8.5 million tons). The impoundment footprint increased by about 3 acres (to 94 total acres).

At the mining sites, blasting is accomplished using either prill (solid pellets) or emulsion forms of ANFO (ammonium nitrate fuel oil), dynamite, cast boosters, primers and caps. Incomplete blasting, spillage of liquid or powder, or dissolution of the powder/pellets with water may all result in residual nitrates released to the environment. Nitrate residuals may be present in waste rock, underground mine water, and/or the mined ore. The Permittee uses ANFO emulsions instead of the ANFO prill, when underground water is encountered, or expected to be encountered.

Additionally, sulfide minerals encountered during mining may chemically react when exposed to air and moisture (termed 'acid mine drainage'). Acid mine drainage occurs when mineral pyrite is oxidized to form sulfuric acid and iron hydroxide according to the following equation:

$$FeS_2 + 3.75\ O_2 + 3.5\ H_2O \rightarrow Fe(OH)_3 + 2\ H_2SO_4$$

The sulfuric acid generated may be neutralized with other minerals present (like calcium carbonate). In this case, additional dissolved solids (e.g. sulfates, carbonates, etc.) may be released to local surface and ground waters. However, when there is not enough neutralizing

material available, a lowering of pH in local surface and groundwater may occur. Additionally, at low pHs, metals are more soluble and may be discharged to the environment.

At the K2, Lamefoot, and Key Project mine sites, acid and base accounting was conducted prior to, and for the Lamefoot mine, during mining. These results generally indicated that there were sulfide minerals present that would oxidize. However, there was sufficient buffering material available to neutralize any acid generated. Further, specific requirements for handling and backfilling potentially acid generating material were in place for the Lamefoot mine site (BLM, 1994a) and the Key Project mines (Ecology, 1992). For the affected areas (described in more detail below), the current ground and surface water monitoring has generally confirmed these predictions. Both surface and groundwater water pH has remained near neutral. However, there have been increases in dissolved solids in affected aquifers and waterbodies.

GROUND WATER

A description of the geology and hydrogeology in the vicinity of each facility has been described in previous Environmental Impact Statements (EIS). These include: Kettle River Project EIS (Ecology, 1988); Key Project Expansion EIS (Ecology, 1992); Lamefoot Mine EIS, (BLM, 1994b); and the K-2 Project EIS (Ecology, 1994). On a regional scale, all sites lie within the Republic graben, one of the north-northeast structural depressions that cross cut the region (Ecology, 1994). The graben is up to 10 miles wide by 50 miles in length with variable amounts of fill. The boundaries of the graben is defined by the Bacon Creek and Sherman Faults which are about 50 million years in age (see Figure 1).

Geologic units found in the graben have been subdivided into the following (Ecology, 1994): Permian and Triassic (180-230 million years old) metasedimentary and metavolcanic rocks; Late Cretaceous (65 to 130 million years old) to Eocene (36-58 million years old) intrusive rocks: Eocene volcanic and sedimentary rocks; and Quaternary (0-2 million years old) alluvium (deposited by flowing water) and glaciofluvial (deposited by flowing water from melting glaciers) deposits.

<u>K2 Mine</u>

The K2 underground mine site lies adjacent to the Kettle River near the town of Curlew (see Figure 3). The locations consists of a mine portal, administrative and shop buildings, top soil stockpiles, and a waste rock disposal area. The K2 site is dominated by unconsolidated glacial deposits varying from 30 to 100 feet thick. Terraces of glaciofluvial deposits are common in the Kettle River valley. Bedrock in the K2 vicinity consists of Tertiary volcanic rocks of the Sanpoil and Klondike Mountain formations. The Sanpoil formation consists of massive competent flows of rhyodacite of the Sanpoil volcanics with very little fracturing. The ore body is hosted in the Sanpoil volcanics whereas the mine entrance (portal) is in the Klondike Mountain Formation.

Groundwater occurs both at the base of the unconsolidated deposits that overlay bedrock and within the bedrock as fracture flow. Groundwater in the unconsolidated deposits is most commonly found in surface depressions and stream drainages. In bedrock, minor amounts of groundwater occur because of the competent nature of the material.

During development and exploration of the mine, a limited amount of groundwater was encountered at the fault between the Sanpoil and Klondike Mountain formations. However,

there were large volumes and pressures from drill holes intercepting the rubble of the vein system [up to 700 feet below ground surface (bgs)].

Pre-mining, groundwater flow at the bedrock interface would generally follow topography down to the Kettle River alluvium. The same would be true for groundwater movement in the bedrock. As a result of dewatering during exploration and mining, a local depression in bedrock groundwater levels in the area would be expected.

There are two groundwater monitoring wells installed for this site (K2-1 and K2-2) both finished in the alluvial deposits (see Figure 3). Well K2-1 is located downgradient from the mine site facilities whereas well K2-2 is immediately downgradient of the waste rock disposal area. Water levels in K2-1 and KW-2 vary between 26 to 31 and 40 to 46 feet bgs, respectively. The wells have been monitored since 1993.

Water from well K2-1 has consistently met ground water quality criteria. However, TDS from K2-2 has exceeded applicable criteria of 500 mg/L (see Appendix C - Water Quality Monitoring Results). Increasing constituent trends from well K2-2 are also noted for nitrates, TDS, sulfates, and alkalinity. These increases may be attributed to the proximity of the well to the waste rock disposal area.

Key Mill

At the Key Mill site, the bedrock units are overlain by a series of alluvial and glaciofluvial stream terraces. There are three distinct terraces onsite which appear to indicate three cycles of aggradations and subsequent erosion (Golder Associates, 1989). Depth to the bedrock surface varies from 10 feet on the upper terrace level to over 120 feet on the lower terrace level.

Prior to construction of the tailings pond, there were two local aquifers identified at the Key Mill site (upper and lower). The upper aquifer sat on top of the bedrock in the north portion of the upper terrace and on a low permeable aquitard layer consisting of clays and silts in the intermediate and lower terraces (Hydro-Geo Consultants, 1989). This upper ground water level varied from 10 to 80 feet bgs. The lower aquifer was separated from the shallow aquifer by silty clays and silts. The depth to water for the deeper aquifer ranged from 99 to 112 feet bgs. The general flow direction for both aquifers was southerly, towards the North Fork of the Sanpoil River.

These local hydrogeologic conditions were impacted by the construction of the tailings pond. The monitoring wells installed prior to construction went dry, as well as seeps located along the banks of the North Fork of the Sanpoil River adjacent to the area. This was likely due to a loss of recharge to the area; and the collection of groundwater from beneath the tailings pond.

Monitoring wells TP-1 and TP-2 (see Figure 2) were installed in October 1991 to replace the pre-existing monitoring well network. These wells were finished in the upper aquifer to depths of 50 and 70 feet bgs, respectively. Monitoring well TP-3 (Figure 2) was installed in 1994 at the time of the first expansion of the tailings pond. Well TP-3 was finished in the lower aquifer.

Water quality from all wells (TP-1, TP-2 and TP-3) show an increasing trend for nitrates, TDS, magnesium, calcium, alkalinity and sulfate concentrations. Well TP-1 (located in upper alluvium aquifer closest to mill facilities) has regularly exceeded ground water quality criteria

for TDS and periodically for nitrates. Water quality from well TP-2 has exceeded criteria for TDS. Ground water quality results from well TP-3 has met applicable criteria.

As part of the mitigation measures for the 2001 expansion of the tailings disposal facility (see discussion in Section *SEPA Compliance,* below), Echo Bay prepared a hydrogeologic study to assess the impacts to these wells. Potential sources included the tailings facility, Key Mill site, ore stockpiles, magnesium chloride storage facilities, septic system, and stormwater site drainage sump (HydroGeo Inc., 2001a). The report concluded that past loss events from the tailings facility (described in Section *Wastewater Characterization*, below) were the most probable cause of the impacts to these wells.

Key Project

The site straddles a major divide between two watersheds (see Figure 4). The southern part of the project (containing the waste rock disposal area) is within the North Fork of the Sanpoil drainage. This area is drained by an unnamed ephemeral tributary of the North Fork of the Sanpoil River. The northern part of the project (containing the east and west mining pits) lies within in the Lambert Creek drainage. This area is drained by an ephemeral tributary of Lambert Creek. Lambert Creek flows east/northeast and joins Curlew Creek near the outlet of Curlew Lake. The Key east pit was filled with wasterock taken from the Key west pit during mining. The Key west pit remained open and is presently accumulating water.

The hydrogeology of the Key Project site is typical of terrain containing crystalline rocks. Groundwater occurs in near surface alluvial/colluvial systems which overlie the less permeable crystalline bedrock. Generally, the near surface aquifer may or may not be in contact with the underlying bedrock, depending on the degree of weathering and near surface fracturing. Ground water flow within the near surface aquifer follows surface topography. There are small seepages on both the north and south sides of the drainage divide. These are most likely contact springs created by the intersection of the less permeable till or bedrock with the ground surface (Ecology, 1992).

Baseline groundwater quality information was collected by two monitoring wells (KW-1 and KW-2). Both these wells were abandoned as a result of site mining activities. Well KW-2 was located in the area of the present Key East pit and was not replaced when abandoned. Well KW-1 was located in the area of the waste rock disposal site. In late 1992, this well was replaced by KW-1A (see Figure 4) located further downgradient of the waste rock disposal area.

Water quality in well KW-1A shows increasing trends for TDS, sulfates, and nitrates. These parameters exceed applicable ground water quality criteria. Appendix C contains selected water quality results for these sites.

Lamefoot Mine

The Lamefoot mine site is located along State Route 21 adjacent to Curlew Lake (see Figure 5). The hydrogeology conditions at the Lamefoot mine site are similar to the K2 mine site. The local aquifers in the regional groundwater system are glacial deposits and alluvial sediments along streams and river valleys (BLM, 1994b). Groundwater in bedrock is expected to occur in relatively small amounts and varies locally depending on the nature and extent of faulting and fracturing. The quantity of groundwater may be small in permeable faults or fracture zones,

unless the area is either interconnected with many fractures or is in hydraulic connection with a surface water body or saturated aquifer. Groundwater flow direction generally follows topography. For the site, groundwater flow appears to be to the west/southwest (BLM, 1994b). As a result of the mining activities, there has been a drawdown of groundwater levels in the bedrock aquifer.

The workings of the mine included thousands of feet of new large open voids which may connect many faults and fractures that were discontinuous prior to mining. After refilling, groundwater flow within the mine will be controlled by these mine voids and the hydrostatic head in the mine pool. Seepage to the surface/near-surface may result where mine workings intersect with faults and fractures (BLM, 1998). Groundwater modeling conducted by the BLM suggests that water may move out of the workings through the Wolf Camp fault and into the valley (BLM, 1998). Table 1 identifies monitoring well information for the Lamefoot site (EnviroData Solutions, 2002). Well locations are shown in Figure 5.

Wells that would be expected to show impacts from the underground mining operations include those associated with the Wolf Camp drainage: shallow (valley fill/alluvium) wells LF-1, LF-2, LF-5, LF-7, LF-8, and LF-12; and deeper wells LF-4 and LF-6. With the exception of LF-12, there are no increasing trends noted for wells LF-5, LF-7, and LF-8 for nitrates, sulfates, TDS, and alkalinity. There is a decreasing trend observed for TDS and sulfate for wells LF-1, LF-2, and LF-4. The decrease in dissolved solids in these wells is attributed to the interception of groundwater flow through the mineralized ore body by the mining activities (EnviroData Solutions, 2002).

Ground water quality criteria for nitrates have been exceeded for wells LF-8 (three times), LF-7 (one time) and LF-12 (consistently). Exceedences at LF-7 and LF-8 were most likely due to the discharge of mine water to a then permitted onsite infiltration basin. After the exceedences were noted, the use of the onsite infiltration pond was limited and mine water was trucked to the Key mill tailings disposal facility for disposal. Well LF-12 is located near the previous wasterock and temporary ore stockpile of the mine site.

SURFACE WATER

The Permittee is required to monitor a number of surface water monitoring sites for any offsite impacts to surface water. These are described below.

Key Mill

The North Fork of the Sanpoil River flows adjacent to the Key Mill site (see Figure 4). The mill facilities are located downstream from the Overlook and Key Project waste rock disposal area. There are two monitoring sites along the North Fork of the Sanpoil associated with the Key Mill site (SW-4 and SW-7).

About one mile downstream of the Key Mill site, the North Fork of the Sanpoil joins the South Fork to form the main stem of the Sanpoil River. The river continues for another 2 miles to Torboy where a man-made diversion directs the river to the north and south. Water that flows to the north feeds Curlew Lake. The outlet of Curlew Lake (Curlew Creek) flows about 10 miles north to the Kettle River. The Kettle River then eventually flows west discharging to the Columbia River just north of the Town of Kettle Falls.

The portion of the Sanpoil River that is directed south at Torboy feeds Sanpoil Lake. The outlet of the lake (Sanpoil River) flows past the Town of Republic and, then joins the Columbia at the town of Keller.

There is no noticeable difference for surface water quality results between the upstream site (SW-4) and the downstream (SW-7) location, indicating no offsite impacts to the Sanpoil from the mill site operations.

Overlook Mine

The mine site is located in an ephemeral drainage that feeds the North Fork of the Sanpoil River upstream of the Key Mill site (see Figure 4). Water in the drainage is fed by both snowmelt, heavy rainfalls and from several springs in the vicinity. There were two surface water monitoring stations at the Overlook site (SW-1 and SW-2); however, only SW-2 is currently monitored. Site SW-2 is at the confluence of the Overlook drainage and the North Fork of the Sanpoil. Site SW-3 is immediately upgradient on the North Fork of the Sanpoil.

Water quality from SW-2 generally shows increased levels of TDS (i.e. alkalinity, calcium, magnesium, sulfate) and nitrates when compared SW-3. Metals levels from the sites appear to be below applicable surface water quality criteria.

Key Project

As described previously, the site straddles a major divide between two watersheds (see Figure 4). The southern part of the project (containing the waste rock disposal area) is within the North Fork of the Sanpoil drainage. This area is drained by an unnamed ephemeral tributary of the North Fork of the Sanpoil River. The northern part of the project (containing the east and west mining pits) lie within in the Lambert Creek drainage. This area is drained by an ephemeral tributary of Lambert Creek. Lambert Creek flows east/northeast and joins Curlew Creek near the outlet of Curlew Lake. The Key east pit was filled with waste rock from the Key west pit during mining. The Key west pit remained open and is presently accumulating water.

The quality of Key east pit water shows strong seasonal variations. During the spring snow melt, constituent concentrations decrease, then gradually increase over the summer season. From April of 1995 to present, there is no increasing trend for TDS, total alkalinity, and sulfate concentrations. Metals concentrations (except for early exceedences for cadmium, selenium, and silver), have met applicable surface water quality criteria.

There have been two studies (Hydro-Geo Consultants, 1996a & HydroGeo, Inc., 2001b) that have predicted long term pit lake water quality and quantity of outflows. The 1996 study estimated that the pit water level would eventually increase (within 20 to 25 years) so that there would be surface outflow from the pit (overflow level of 4,340 feet) . However, the updated 2001 study noted that the lake was filling faster than predicted and estimated that by 2003 the pit would overflow. Presently, the pit has not yet reached the overflow level.

An outlet channel was constructed to divert this potential outfall to a gradual 1/2 acre depression. This area is expected to contain large storm events and spring runoff from the pit area (i.e. accumulated water will infiltrate into the ground). The 1996 study estimated that the pH of the pit lake water quality would remain near neutral to slightly alkaline with sulfate and calcium concentrations increasing to 1,000 and 350 mg/L, respectively. The second study predicted that

water quality would remain at or below current constituent concentrations (see Appendix C for selected results from these stations).

For the west portion of the project (in the North Fork of the Sanpoil drainage), there one surface water site (SW-12) in the ephemeral tributary draining the area downgradient from groundwater monitoring well KW-1A. There is a surface water site (SW-2) located on the North Fork of the Sanpoil River, downgradient of SW-12 and upgradient of the Overlook and Key Mill sites (see Figure 4). Water quality from SW-12 mirror results seen for ground water well KW-1A: increasing trends are noted for nitrates, TDS, and sulfate. The results are far above those observed for other surface waters sites in the drainage (SW-3, SW-4, and SW-7).

K2 Mine

The site is situated adjacent to the southern bank of the Kettle River (see Figure 3). Emanuel Creek flows about 1,000 feet east of the mine site. There are four surface water stations associated with this site, two (upstream and downstream) on Emanuel Creek and two (upstream and downstream) on the Kettle River. There are no appreciable differences between the upstream and downstream water quality results (see Appendix C for selected results from these stations).

Lamefoot Mine

There are no major streams or tributaries for the Lamefoot mine site; however, there are a number of springs and isolated wetlands (see Figure 5). A flowing spring is located along Wolfe Camp Road. The flow varies seasonally from 1 gpm in the fall to 60 gpm in the spring (BLM, 1998). The source of the spring may be from either alluvium or glacial deposits; or from connection with a bedrock flow system (BLM, 1994b). The spring flow discharges to the Wolf Camp drainage and feeds into a wetland area #3. This wetland has no surface water outlet (water infiltrates into the underlying glacial gravels). Wetland #3 also is fed by wetland area #2 located in a small tributary drainage basin to the west of Wolfe Camp road. Wetland #1 is located north of the mine area and wetland area #4 is just south of the temporary ore stockpile.

Water quality monitoring from these sites includes the four wetlands, Wolfe Camp spring, and two more springs in the site vicinity (SPR-3035 and SPR-2, see Figure 5).

PERMIT STATUS

An application for permit renewal was submitted to the Department on July 17, 2000 and accepted by the Department on July 31, 2000. The previous permit for this facility was issued on November, 1989.

SUMMARY OF COMPLIANCE WITH THE PREVIOUS PERMIT

The facility receives inspections on a quarterly basis as required by RCW 78.56, Metals Mining and Milling Operations. The last inspection conducted by the Department's Water Quality Program was on May 1, 2003.

During the history of the previous permit, the Permittee has generally remained in compliance based on Discharge Monitoring Reports (DMRs) and other reports submitted to the Department and inspections conducted by the Department.

In 1998, the Department issued an administrative Order to the Permittee in response to ground water criteria exceedences in wells LF-8 and LF-12 for nitrates. The order specified disposal alternatives for excess mine water from the Lamefoot mine; and required a report examining whether any leachate or runoff from the temporary ore stockpile, waste rock stock pile, and waste rock dump was contributing to ground water quality degradation.

The permittee appealed this Order to the Pollution Control Hearings Board (PCHB). The matter was not formally heard before the PCHB, but rather was settled between Ecology and the Permittee. The settlement:

- clarified the Department's approach for regulating nitrate concentrations in wells LF-8 and LF-12;
- acknowledged that materials placed in the temporary ore stockpile, waste rock stockpile, and waste rock dump would be handled according to requirements outlined by the Bureau of Land Management. Further, these materials would be removed from the affected areas by the end of December, 2001; and
- refined the conditions related to the disposal of excess water from the Lamefoot mine.

The report examining the potential for leachate and runoff from ore and wasterock stockpiles to contaminate ground water was prepared according to the Order (TRC Hydro-Geo Consultants, 1998). Testing of the ore and wasterock samples showed trace levels of leachable nitrates (ranging from <0.5 mg/L to 0.93 mg/L).

WASTEWATER CHARACTERIZATION

The concentration of pollutants in the tailings pond and underdrain was reported in the permit application and in discharge monitoring reports. Table 2 lists the data from the tailings pond and underdrain from January, 1995 to May, 2003. This information is summarized below:

Wastewater Characterization

	Concentration (min; avg; max)	
Parameter	Tailings Pond	Underdrain
pH (s.u.)	4.2; 7.9; 8.4	6.9; 7.6; 8.2
Conductivity (µmhos/cm)	Not Measured	514; 830; 2,700
WAD Cyanide (mg/L)	1.0; 8.8; 40	<0.01; 0.11; 0.80

Since the tailings pond was first constructed, there has been six separate incidences that elevated conductivity levels were noted in the tailings pond underdrain system, indicating a leak in the synthetic liner system (Echo Bay, 2001).

Incident #1 occurred in January 1990 shortly after Phase I of the impoundment was commissioned. At this time, the impoundment did not contain any tailings. The increase in conductivity was attributed to pin sized holes in the geomembrane liner. Once the impoundment accumulated the fine grain tailings material, any defects were plugged by the tailings and the conductivity in the under drain system returned to normal.

Incident #2 occurred during March of 1991. This event was the result of an abrasion in the geomembrane at the point of tailings discharge. The abrasion was repaired using a plastic repair weld. The conductivity in the underdrain returned to normal after the repairs were completed.

Incident #3 occurred in December of 1992 when a leak developed in the reclaim water pipe from the pond back to the plant. This leak occurred outside the impoundment area on the dam crest. This allowed reclaim water (pond water) to permeate the dam (on the down stream side) and infiltrate to the underdrain system. This incident resulted in increases in conductivity and WAD cyanide in the underdrain. The pipe was repaired and the remaining reclaim water was treated with sodium hypochlorite to neutralize any residual cyanide that may have been present.

Incident #4 began in April of 1996 when WAD cyanide was detected in the under drain collection system. Upon close inspection of the impoundment geomembrane, several deficiencies were discovered in one of the seams. The response was an intense program of sampling, analysis and repairs that took place over the next 4 months. The underdrain conductivity returned to normal and the WAD cyanide was undetectable in September of 1996.

Incident #5 started in June of 1998 when WAD cyanide along with elevated conductivity was detected in the underdrain system. After a search of the geomembrane, it was discovered that water had accumulated between the membrane and the welded rub sheet where the reclaim return pipe discharged into the pond. This created a balloon type of effect as the weight of the accumulated water attempted to pull the welded rub sheet away from the geomembrane underneath. This weight resulted in stress tears in the geomembrane. Once the problem was identified, the pressure from the accumulated water between the two layers was released and the tears were repaired. The conductivity returned to normal levels while the WAD cyanide concentration also returned to levels below detection.

Incident #6 occurred during April of 2000. This incident was similar to Incident #5. In this instance, the balloon affect was discovered where the site drainage pump discharged in to the impoundment. However, in this case, the balloon was not accessible because it was partially buried with slurry. The solution was to relocate the tailings discharge to the problem area and cover the problem area with solids to seal it and isolate it from the reclaim water. This proved effective as the conductivity returned to normal and the WAD cyanide returned to levels below detection.

SEPA COMPLIANCE

There have been environmental impact statements prepared for the original project (Key Mill and Kettle and Overlook mines; Ecology, 1988), the Key Project Open Pits (Ecology, 1992), Lamefoot mine (BLM, 1994b), and the K2 mine (Ecology, 1994).

The Department issued a mitigated determination of nonsignificance (DNS) for the most recent expansion of the tailings disposal facility. The mitigating measures included the preparation of a hydrogeologic study assessing the current impacts to ground water from the Key Mill site and an update of the reclamation plan and bond for closure of the tailings disposal facility. The hydrogeologic study was submitted in October, 2001 (HydroGeo Inc., 2001). An update of the closure plan and reclamation costs has also been submitted (Ellis Environmental Engineering, 2002).

PROPOSED PERMIT LIMITATIONS

State regulations require that limitations set forth in a waste discharge permit must be either technology based or water quality based. Wastewater must be treated using all known, available, and reasonable treatment (AKART) and not pollute the waters of the State. The minimum requirements to demonstrate compliance with the AKART standard (no discharge of tailings material to either surface or ground waters of the State) were determined in the various engineering reports associated with the construction and subsequent expansions of the tailings disposal facility.

The permit also includes a limitation on the quality of the wastewater contained in the tailings pond that have been determined to protect the migratory waterfowl from lethal effects associated with the tailings cyanide levels. Water quality-based limitations are based upon compliance with the Ground Water Quality Standards (Chapter 173-200 WAC).

The more stringent of the water quality-based or technology-based limits are applied to each of the parameters of concern. Each of these types of limits is described in more detail below.

TECHNOLOGY-BASED EFFLUENT LIMITATIONS

All waste discharge permits issued by the Department must specify conditions requiring available and reasonable methods of prevention, control, and treatment of discharges to waters of the state (WAC 173-216-110). The following permit limitations are necessary to satisfy the requirement for AKART: there shall be no discharge of process wastewater from the tailings impoundment to either surface or ground waters of the State.

The previous permit limit for weak acid dissociable cyanide in the tailings pond was 40 mg/L. The limit was set at 20% less than levels that the State of Nevada (at the time) had determined to be protective of waterfowl. This limit will be continued in the proposed permit.

GROUND WATER QUALITY-BASED EFFLUENT LIMITATIONS

In order to protect existing water quality and preserve the designated beneficial uses of Washington's ground waters including the protection of human health, WAC 173-200-100 states that waste discharge permits shall be conditioned in such a manner as to authorize only activities that will not cause violations of the Ground Water Quality Standards. The goal of the ground water quality standards is to maintain the highest quality of the State's ground waters and to protect existing and future beneficial uses of the ground water through the reduction or elimination of the discharge of contaminants to ground water [WAC 173-200-010(4)]. This goal is achieved by [GW Implementation Guidance, Abstract, page x]:

1. Requiring that AKART (all known available and reasonable methods of prevention, control and treatment) be applied to any discharge;

2. Application of the antidegradation policy of the ground water quality standards. This policy mandates protecting background water quality and preventing degradation of water quality which would harm a beneficial use or violate the ground water standards; and

3. Establishing numeric and narrative criteria for the protection of human health and welfare in the ground water quality standards.

Numeric ground water criteria (maximum contaminate concentrations) are based on drinking water quality criteria. Applicable criteria concentrations are listed below:

Ground Water Quality Criteria

Total Dissolved Solids	500 mg/L
Chloride	250 mg/L
Cyanide	0.2 mg/L
Sulfate	250 mg/L
Nitrate (as N)	10 mg/L
pH	6.5 to 8.5 standard units
Manganese	0.05 mg/L
Total Iron	0.3 mg/L
Toxics	No toxics in toxic amounts

The intent of the ground water quality standards is to protect background water quality to the extent practical, rather than to allow degradation of ground water quality to the criteria. The procedures for estimating background water quality is contained in the Guidance Document for Implementing the Ground Water Standards (Ecology, 1996). Background water quality is defined as the 95 percent upper tolerance interval with a 95 percent confidence.

K2 Mine, Key Project and Key Mill

The monitoring well locations associated with the Key Project, Key Mill, and K2 mine, do not provide upgradient ground water quality measurements. Rather, well installations occurred either prior to site disturbance or before any observable ground water impacts.

The proposed permit will set enforcement limits for the K2, Key Project, and Key Mill sites based on pre-activity (or pre-impacted) ground water quality. Pre-activity (or pre-impacted) ground water data was used to calculate a 95 percent upper tolerance interval (95 percent confidence). These limits and associated data descriptions are summarized in Table 3.

However, in reviewing the ground water data for these sites, pre-activity ground water quality is not protected for certain wells. Table 4 includes a summary of these wells and applicable parameters. The proposed permit contains a compliance schedule to allow time for the Permittee to achieve compliance with ground water quality enforcement limits [as allowed by WAC 173-200-100(4)]. This proposed compliance schedule includes:

1. Preparation of a hydrogeologic/engineering report addressing all known available and reasonable methods of prevention, control and treatment (AKART) for sources contributing pollutants that degrade background ground water quality. This report will also require remediation alternatives for ground waters exceeding applicable criteria.

2. Implementation of the approved AKART measures and remediation alternatives.

3. An assessment of whether the implemented source prevention and control and/or ground water remediation options have achieve compliance with the background (pre-activity) ground water limits. If the background ground water quality is not protected, the assessment report may address establishing different enforcement limits according to provisions in WAC 173-200-050; or using alternative points of compliance according to WAC 173-200-060.

Previous studies have been conducted for wells TP-1, TP-2 and TP3 (Hydro-Geo, 2001) and for well LF-12 (TRC Hydro-Geo Consultants, 1998) identifying potential sources of contamination; and for the tailings pond wells, source control and reduction measures. The permit proposed requires that the hydrogeologic/engineering report again address these wells to update any new information at these two locations.

To maintain the existing ground water quality, the proposed permit will also set interim ground water enforcement limits. In this way, the impacted ground water quality will be maintained until either the final compliance limits are met or different enforcement limits and/or points of compliance are established. These interim limits were again calculated using a 95 percent upper tolerance interval (95 percent confidence). Table 4 summarizes these interim limits.

Lamefoot Mine

For the Lamefoot site, both upgradient, downgradient, and pre-activity (for selected wells) data is available. For the Lamefoot site (with the exception of wells LF-7, LF-8, and LF-12) ground water quality has been either below applicable ground water criteria or has not increased over pre-activity levels. As explained in the *GROUND WATER* section, nitrate concentrations have been consistently exceeded for well LF-12. Well LF-7 nitrate concentrations peaked in 1993 (with one value above the criteria) and have remained stable since that time. Well LF-8 nitrate concentrations peaked in 1993 and 1996 (a total of three values above the criteria) and show a decreasing trend from 1996 to 1998. Well LF-8 nitrates have remained stable since 1998.

For wells LF-1 and LF-2, the proposed permit will set enforcement limits based on premining levels for TDS, sulfate and nitrate. Pre-activity data is not available for other wells that may be impacted by the mining operations (LF-4, LF-5, LF-6, and LF-8). However, no increasing trends are noted for these wells for the pollutants of concern. Therefore, the proposed permit will set enforcement limits based on existing groundwater data. Table 5 lists these enforcement limits.

For Lamefoot well LF-12, an enforcement limit cannot be established because there is insufficient pre-mining data. However, to maintain the existing ground water quality, the proposed permit will also set an interim ground water enforcement limits for this well. The interim limits were again calculated using a 95 percent upper tolerance interval (95 percent confidence). Table 5 also summarizes the interim limits for well LF-12.

COMPARISON OF LIMITATIONS WITH THE EXISTING PERMIT

Limitations for the tailings pond have not changed from the previous permit: a weak acid dissociable (WAD) cyanide concentration of 40 mg/L in the tailings pond; and the requirement that there shall be no discharge from the pond to surface or ground waters of the State.

The proposed ground water enforcement limits and related requirements are new. The previous permit did not contain any ground water enforcement limits.

MONITORING REQUIREMENTS

Monitoring, recording, and reporting are specified to verify that the treatment process is functioning correctly, that surface and ground water criteria are not violated, and that effluent limitations are being achieved (WAC 173-216-110).

WASTEWATER MONITORING

The monitoring schedule is detailed in the proposed permit under Condition S2 and S3. Specified monitoring frequencies take into account the quantity and variability of the discharge, the treatment method, past compliance, significance of pollutants, and cost of monitoring.

GROUND AND SURFACE WATER MONITORING

The monitoring of ground water at the site is required in accordance with the Ground Water Quality Standards, Chapter 173-200 WAC. As explained previously, the Department has determined that this discharge has a potential to pollute the ground water. Therefore the Permittee is required to evaluate the impacts on ground water quality. Monitoring of the ground water at the site boundaries and within the site is an integral component of such an evaluation. Additionally, surface water monitoring at the site is necessary to determine the effects of the operations on surface waters of the state

The proposed permit requires the preparation of a ground and surface water monitoring plan for Department review and approval. This plan will include a list of ground water wells and surface water locations to be tested, monitoring parameters, frequencies and sampling procedures. Department approval will also be required prior to any changes to this monitoring plan.

OTHER PERMIT CONDITIONS

RECLAMATION PLAN UPDATE

For the original project consisting of the Key Mill and tailings disposal facility, and the Overlook and Kettle River mine, a reclamation plan and bond was required. The bond amount was updated in the Spring of 2003 to reflect the current cost to reclaim the tailings disposal facility according to the original reclamation plan.

The original reclamation plan included a four foot thick soil cap (with a domed 0.5% slope), and a 6 inch vegetative soil cover layer for the tailings impoundment. Based on best professional judgment, this soil cover/ vegetative layer will not adequately prevent precipitation from infiltrating into the tailings. Therefore, the proposed permit requires an updated design utilizing a composite cap (use of impermeable layer(s), drainage layer(s), and vegetative soil cover layer) for the tailings disposal facility. This updated design will provide better long term stability of the impoundment area by preventing excess water infiltration to the tailings.

REPORTING AND RECORDKEEPING

The conditions of S3 are based on the authority to specify any appropriate reporting and recordkeeping requirements to prevent and control waste discharges (WAC 273-216-110).

OPERATIONS AND MAINTENANCE

The proposed permit contains condition S.5. as authorized under Chapter 173-240-150 WAC and Chapter 173-216-110 WAC. It is included to ensure proper operation and regular maintenance of equipment, and to ensure that adequate safeguards are taken so that constructed facilities are used to their optimum potential in terms of pollutant capture and treatment.

SOLID WASTE PLAN

The Department has determined that the Permittee has a potential to cause pollution of the waters of the state from leachate of solid waste.

This proposed permit requires, under the authority of RCW 90.48.080, that the Permittee update the solid waste plan designed to prevent solid waste from causing pollution of the waters of the state and submit it to the Department.

SPILL PLAN

The Department has determined that the Permittee stores a quantity of chemicals that have the potential to cause water pollution if accidentally released. The Department has the authority to require the Permittee to develop best management plans to prevent this accidental release under section 402(a)(1) of the Federal Water Pollution Control Act (FWPCA) and RCW 90.48.080.

The Permittee has developed a plan for preventing the accidental release of pollutants to state waters and for minimizing damages if such a spill occurs. The proposed permit requires the Permittee to update this plan and submit it to the Department.

As described earlier, blasting has been accomplished using prill ANFO (solid pellets), emulsion forms of ANFO, dynamite, cast boosters, primers, and caps. There is more potential for loss of prill material when water is encountered during blasting. To prevent and control pollution, the proposed permit requires that the spill plan address the best management practices used for handling and use of explosives at the operations.

GENERAL CONDITIONS

General Conditions are based directly on state laws and regulations and have been standardized for all industrial waste discharge to ground water permits issued by the Department.

Condition G1 requires responsible officials or their designated representatives to sign submittals to the Department. Condition G2 requires the Permittee to allow the Department to access the treatment system, production facility, and records related to the permit. Condition G3 specifies conditions for modifying, suspending or terminating the permit. Condition G4 requires the Permittee to apply to the Department prior to increasing or varying the discharge from the levels stated in the permit application. Condition G5 requires the Permittee to construct, modify, and operate the permitted facility in accordance with approved engineering documents. Condition

G6 prohibits the Permittee from using the permit as a basis for violating any laws, statutes or regulations. Conditions G7 and G8 relate to permit renewal and transfer. Condition G9 requires the payment of permit fees. Condition G10 describes the penalties for violating permit conditions.

RECOMMENDATION FOR PERMIT ISSUANCE

This proposed permit meets all statutory requirements for authorizing a wastewater discharge, including those limitations and conditions believed necessary to control toxics, and to protect human health and the beneficial uses of waters of the State of Washington. The Department proposes that the permit be issued for five years.

REFERENCES FOR TEXT AND APPENDICES

BLM, 1994a. Record of Decision, Lamefoot Mine Environmental Impact Statement, Supplement to the Kettle River Key Project Expansion, U.S. Department of the Interior, Bureau of Land Management, November, 1994.

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Echo Bay Minerals, 2001. Letter to Pat Hallinan, Department of Ecology from Wayne Zigarlick, Mill Superintendent, Echo Bay Minerals Company, March 2, 2001.

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Ellis Environmental Engineering, 2002. Reclamation Plan and Closure Costs for Kettle River Tailing Facility, Ellis Environmental Engineering, Inc., 2002 Revision.

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HydroGeo, Inc. 2001a. Addendum to Key West Pit Filling Study, HydroGeo, Inc., May, 2001.

HydroGeo, Inc. 2001b. Final Report Hydrogeologic Evaluation of the Key Mill/Tailings Facility Area, HydroGeo, Inc., August, 2001.

TRC Hydro-Geo Consultants, 1998. Lamefoot Mine Nitrate Analysis, Echo Bay Minerals - Kettle River Operations, TRC Hydro-Geo Consultants, July 10, 1998.

Table 1 - Lamefoot Mine Monitoring Wells

Well #	Aquifer	Well Depth (ft)	Location Description	Date Installed
LF-1	Valley Fill/Alluvium	28	North of Infiltration Pond	10/91
LF-2	Valley Fill/Alluvium	37	Along Wolfe Camp Road	10/91
LF-3	Bedrock (Clastics)	538	Downgradient of Mine	6/94
LF-4	Bedrock (Limestone)	342	West of Mine	6/94
LF-5	Valley Fill/Alluvium	21	North of Infiltration Pond	5/94
LF-6	Bedrock (Clastics)	228	West of Infiltration Pond	6/94
LF-7	Valley Fill/Alluvium	56	Downgradient of Mine	5/94
LF-8	Valley Fill/Alluvium	60	Downgradient of Mine	5/94
LF-10	Bedrock (Clastics)	750	Upgradient of Mine	2/95
LF-10T	Bedrock (Clastics)	40	Upgradient of Mine	3/95
LF-11	Bedrock (Clastics)	650	Upgradient of Mine	2/95
LF-11T	Bedrock (Clastics)	40	Upgradient of Mine	3/95
LF-12	Valley Fill/Alluvium	20	Downgradient of Waste Rock Storage Area	3/95
LF-13	Bedrock (Limestone)	1105	Northern End of Mine Workings	10/96
LF-14	Bedrock (Greenstone)	1220	Northern End of Mine Workings	10/96
LF-15	Bedrock (Clastics/Siltite)	248	East Side of Curlew Lake Fault	12/98
LF-16A	O'Brien Creek Formation	250	Within Curlew Lake Fault	1/99
LF-16B	O'Brien Creek Formation	240	West of Curlew Lake Fault	1/99
LF-17	Bedrock (Clastics)	610	Within Gravel Pit Fault	12/98
LF-18	Knob Hill Greenstone	-	North of Lamefoot Orebody	-
MSWOB-1	Bedrock (Clastics)	270	Downgradient of Mine	1/95
MSWOB-2	Bedrock (Clastics)	270	Downgradient of Mine	2/95

Table 2 - Discharge Monitoring Report Summary, 1/95 to 5/03

	Cond (µmhos/cm)		pH (s.u.)		WAD Cyanide (mg/L)		pH (s.u.)		WAD Cyanide (mg/L)	
Date	Avg	Max	Min	Max	Avg	Max	Min	Max	Avg	Max
Jan-95	649	662	8.2	8.2	<0.01	<0.01	8	8	14	20
Apr-95	631	644	8.1	8.2	<0.01	<0.01	8	8	11	16
May-95	628	641	8.1	8.2	<0.01	<0.01	8	8	17	30
Jun-95	647	658	8.1	8.2	<0.01	<0.01	8	8	7	17
Jul-95	656	664	8.1	8.2	<0.01	<0.01	8	8.1	4	8
Aug-95	633	646	7.6	8	<0.01	<0.01	7.9	8.1	6	9
Sep-95	624	631	7.8	7.9	<0.01	<0.01	8	8.1	8	14
Oct-95	618	621	7.9	7.9	<0.01	<0.01	8	8.1	13	15
Nov-95	603	615	7.9	7.9	<0.01	<0.01	8	8.1	14	18
Dec-95	635	714	7.9	7.9	<0.01	<0.01	8	8.1	14	18
Jan-96	716	736	7.9	7.9	<0.01	<0.01	8	8	15	20
Feb-96	636	665	7.9	7.9	<0.01	<0.01	8	8	17	22
Mar-96	614	638	7.9	7.9	<0.01	<0.01	8	8	13	17
Apr-96	611	647	7.9	7.9	0.034	0.047	8	8	11	17
May-96	1573	2470	7.5	7.9	0.53	0.8	8	8	8	13
Jun-96	2374	2510	7.5	7.5	0.31	0.62	8	8	4	6
Jul-96	2343	2700	7.5	7.5	0.02	0.04	8	8	2	6
Aug-96	1470	2030	7.5	7.5	<0.01	<0.01	8	8	2	6
Sep-96	1039	1255	7.5	7.5	<0.01	<0.01	8	8	5	7
Oct-96	831	897	7.5	7.5	<0.01	<0.01	8	8.1	8	10
Nov-96	753	785	7.5	7.5	<0.01	<0.01	8	8.1	8	10
Dec-96	697	707	7.5	7.5	<0.01	<0.01	8	8.1	9	10
Jan-97	708	731	7.5	7.5	<0.01	<0.01	8	8	12	17
Feb-97	746	778	7.9	7.9	<0.01	<0.01	8	8	13	15
Mar-97	765	778	7.9	7.9	<0.01	<0.01	8	8	14	18
Apr-97	762	774	7.9	7.9	<0.01	<0.01	8	8	16	21
May-97	708	751	7.9	7.9	<0.01	<0.01	8	8	15	16
Jun-97	646	651	7.9	7.9	<0.01	<0.01	8	8	11	14
Jul-97	622	637	7.5	7.5	<0.01	<0.01	8	8	8	11
Aug-97	590	610	7.5	7.5	<0.01	<0.01	8	8	9	12
Sep-97	579	584	7.5	7.5	<0.01	<0.01	8	8	11	16
Oct-97	580	582	7.5	7.5	<0.01	<0.01	8	8.1	13	22
Nov-97	579	582	7.5	7.5	<0.01	<0.01	8	8.1	13	20
Dec-97	544	575	7.5	7.5	<0.01	<0.01	8	8.1	10	14
Jan-98	535	542	7.5	7.5	<0.01	<0.01	8	8	10	20
Feb-98	514	576	7.5	7.5	<0.01	<0.01	8	8	14	17
Mar-98	532	577	7.5	7.5	<0.01	<0.01	8	8	12	19
Apr-98	588	607	7.5	7.5	<0.01	<0.01	8	8	10	18
May-98	-	-	7.9	7.9	<0.01	<0.01	8	8	10	15
Jun-98	1113	2240	7.4	7.8	0.13	0.42	8	8	11	13
Jul-98	1048	1208	7.4	7.8	<0.01	0.02	8	8	16	28
Aug-98	949	1203	7.5	7.8	<0.01	0.02	8	8.4	25	30
Sep-98	915	1189	7.5	7.5	<0.01	<0.01	8	8	14	25
Oct-98	1651	2050	7.5	7.5	0.02	0.08	8	8.1	16	22
Nov-98	2038	2410	7.5	7.5	0.03	0.05	8	8.1	10	18
Dec-98	1052	1385	7.5	7.5	<0.01	<0.01	8	8.1	5	11
Jan-99	735	808	7.5	7.6	<0.01	<0.01	8	8.1	4	8
Feb-99	740	839	7.5	7.6	<0.01	<0.01	8	8.1	6	15
Mar-99	757	790	7.5	7.6	<0.01	<0.01	8	8.1	8	18
Apr-99	724	771	7.5	7.6	<0.01	<0.01	8	8.1	1	5
May-99	707	725	7.5	7.6	<0.01	<0.01	8	8.1	1	5
Jun-99	-	-	7.5	7.6	<0.01	<0.01	8	8.1	9	21
Jul-99	675	684	7.5	7.6	<0.01	<0.01	8	8.1	4	9
Aug-99	668	672	7.5	7.6	<0.01	<0.01	8	8.1	7	13
Sep-99	662	669	7.5	7.6	<0.01	<0.01	8	8.1	12	17
Oct-99	-	-	7.5	7.6	<0.01	<0.01	8	8.1	12	19
Nov-99	637	644	7.5	7.6	<0.01	<0.01	8	8.1	15	21
Dec-99	612	623	7.5	7.6	<0.01	<0.01	8	8.1	13	20

Table 2 - Discharge Monitoring Report Summary, 1/95 to 5/03

	Cond (µmhos/cm)		pH (s.u.)		WAD Cyanide (mg/L)		pH (s.u.)		WAD Cyanide (mg/L)	
Date	Avg	Max	Min	Max	Avg	Max	Min	Max	Avg	Max
Jan-00	605	612	7.5	7.6	<0.01	<0.01	8	8.1	19	29
Mar-00	653	793	7.5	7.6	<0.01	<0.01	8	8.1	7	18
Apr-00	1429	1776	7.5	7.6	0.03	0.05	8	8.1	4	11
May-00	1551	1655	7.5	7.6	0.04	0.06	8	8.1	2	8
Jun-00	1418	1482	7.5	7.6	0.03	0.08	8	8.1	2	8
Jul-00	1266	1362	7.5	7.6	0.01	0.03	8	8.1	5	14
Aug-00	1033	1130	7.5	7.6	<0.01	0.02	8	8.1	21	40
Sep-00	908	965	7.5	7.6	<0.01	<0.01	8	8.1	10	22
Oct-00	842	855	7.5	7.6	<0.01	<0.01	8	8.1	10	31
Nov-00	-	-	7.5	7.6	<0.01	<0.01	8	8.1	10	20
Dec-00	846	994	7.5	7.6	<0.01	<0.01	8	8.1	7	15
Jan-01	840	864	7.5	7.7	<0.01	<0.01	8	8.1	8	15
Feb-01	794	811	7.5	7.6	<0.01	<0.01	8	8.1	6	13
Mar-01	811	850	7.5	7.6	<0.01	<0.01	8	8.2	8	11
Apr-01	816	834	7.5	7.6	<0.01	<0.01	8	8.1	4	9
May-01	847	934	7.5	7.6	<0.01	<0.01	8	8.1	7	16
Jun-01	826	853	7.5	7.6	<0.01	<0.01	8	8.1	7	16
Jul-01	724	787	7.5	7.6	<0.01	<0.01	8	8.1	17	24
Aug-01	696	719	7.5	7.6	<0.01	<0.01	8	8.1	3	8
Sep-01	664	672	7.5	7.6	<0.01	<0.01	8	8.1	5	9
Oct-01	648	656	7.4	7.6	<0.01	<0.01	8	8.1	6	10
Nov-01	640	651	7.5	7.6	<0.01	<0.01	8	8.1	4	6
Dec-01	692	735	7.5	7.7	<0.01	<0.01	8	8.1	5	7
Jan-02	753	766	7.5	7.7	<0.01	<0.01	8	8.1	8	11
Mar-02	792	825	7.5	7.6	<0.01	<0.01	8	8.2	3	4
Apr-02	862	890	7.5	7.6	<0.01	<0.01	8	8.2	6	8
May-02	892	906	7.5	7.6	<0.01	<0.01	8	8.2	6	7
Jun-02	911	916	7.5	7.6	<0.01	<0.01	8	8.2	1	2
Jul-02	862	909	7.5	7.6	<0.01	<0.01	8	8.2	3	4
Aug-02	788	833	7.5	7.6	<0.01	<0.01	8	8.1	5	6
Sep-02	748	786	7.5	7.6	<0.01	<0.01	8	8.1	6	9
Oct-02	687	706	7.5	7.6	<0.01	<0.01	8	8.2	8	11
Nov-02	654	672	7.5	7.6	<0.01	<0.01	8	8.1	11	20
Dec-02	641	665	7.35	7.65	<0.01	<0.01	-	-	-	-
Jan-03	644	663	7.03	7.41	<0.01	<0.01	7.4	7.4	3	3
Feb-03	655	668	7.1	7.95	<0.01	<0.01	4.2	8.3	1	2.48
Mar-03	673	758	6.9	7.5	<0.01	<0.01	7.1	7.1	1	1.14
Apr-03	718	746	6.88	7.26	<0.01	<0.01	7	7	4	4.27
May-03	658	688	6.89	7.06	<0.01	<0.01	7.2	7.2	2	3.28
Min	514	542	6.9	7.1	<0.01	<0.01	4.2	7.0	1.0	1.1
Avg	830	916	7.6	7.7	0.11	0.17	7.9	8.0	8.8	14.3
Max	2374	2700	8.2	8.2	0.53	0.80	8.0	8.4	25.0	40.0

Table 3 - K2, Key Mill & Key Project Ground Water Enforcement Limits

Site	Well	Period of Data	Parameter	Outliers?	Normally Distributed?	Transformation	Coverage ($\alpha = 0.05$)	Enforcement Limit
K2 Mine	K2-1	8/93 – 12/02	NO_3+NO_2	3/18/94 (2.84mg/L)	Yes	none	95%	0.59
		8/93 – 12/02	SO_4	none	Yes	none	95%	57.9
		8/93 – 12/02	TDS	3/12/96 (3,770 mg/L)	Yes	none	95%	363.7
	K2-2	12/94 – 12/97	NO_3+NO_2	9/6/94 (0.26 mg/L)	Yes	none	95%	0.61
		9/94 - 3/97	SO_4	9/11/95 (31 mg/L)	No	n/a	79.5%	72
		9/94 - 12/96	TDS	3/24/97 (172 mg/L)	Yes	none	95%	379.7
Key Mill	TP-1	10/91 – 9/93	NO_3+NO_2	none	No	n/a	79.5%	6.9
		10/91 – 6/93	SO_4	none	Yes	none	95%	28.8
		10/91 – 9/93	TDS	none	Yes	cube root(x)	95%	570.8
	TP-2	10/91 – 12/95	NO_3+NO_2	11/1/92 (1.18 mg/L) 6/1/92 (1.32 mg/L)	Yes	none	95%	8.0
		10/91- 6/92	SO_4	none	Yes	none	95%	25.5
		10/91 – 6/93	TDS	none	Yes	none	95%	679
	TP-3	9/93 – 11/02	NO_3+NO_2	none	No	n/a	89%	2.49
		9/93 – 11/02	SO_4	none	Yes	none	95%	46.1
		9/93 – 11/02	TDS	none	Yes	none	95%	317.9
Key Project	KW-1A	1/93 – 8/93	NO_3+NO_2	none	Yes	none	95%	4.2
		1/93 - 11/93	SO_4	none	Yes	none	95%	226.6
		1/93 - 6/94	TDS	none	Yes	none	95%	622.8

Table 4 - K2, Key Mill & Key Project Ground Water Interim Limits

Site	Well	Period of Data	Parameter	Outliers?	Normally Distributed?	Transformation	Coverage ($\alpha = 0.05$)	Interim Limit (mg/L)
K2 Mine	K2-2	12/98 – 7/03	NO_3+NO_2	none	Yes	x^4	95%	5.7
		6/97 - 7/03	SO_4	none	Yes	none	95%	280
		6/97 - 7/03	TDS	none	Yes	none	95%	921
Key Mill	TP-1	3/94 – 11/02	NO_3+NO_2	12/4/01 (0.08 mg/L)	No	n/a	91.6%	8.0
		6/94 – 11/02	SO_4	none	Yes	none	95%	211
		3/94 – 11/02	TDS	8/12/01 (106 mg/L) 3/12/02 (475 mg/L)	Yes	none	95%	906
	TP-2	3/96 – 11/02	NO_3+NO_2	12/4/01 (0.1 mg/L)	Yes	none	95%	19.4
		9/92 - 11/02	SO_4	6/29/99 (11.3 mg/L)	Yes	none	95%	234
		3/94 – 11/02	TDS	none	Yes	none	95.0%	798
Key Project	KW-1A	9/93 – 7/03	NO_3+NO_2	11/27/01 (0.06 mg/L) 10/29/01 (0.08 mg/L)	No	n/a	95% ($\alpha = 0.03$)	71.4
		5/94 - 7/03	SO_4	none	Yes	none	95%	788
		7/94 - 7/03	TDS	none	Yes	none	95%	1,624

Table 5 - Lamefoot Ground Water Enforcement Limits

Site	Well	Period of Data	Parameter	Outliers?	Normally Distributed?	Transformation	Coverage ($\alpha = 0.05$)	Enforcement Limit (mg/L)
Lamefoot Mine	LF-1	10/91 – 3/93	NO_3+NO_2	1/5/93 (1.99 mg/L)	Yes	none	95%	1.25
		10/91 – 3/93	SO_4	none	Yes	none	95%	248
		10/91 – 3/93	TDS	none	Yes	none	95%	685
	LF-2	4/92 – 3/93	NO_3+NO_2	1/5/93 (1.03 mg/L) 3/2/93 (0.68 mg/L)	Yes	none	95%	0.62
		4/92 – 3/93	SO_4	none	Yes	none	95%	362
		4/92 – 3/93	TDS	8/5/92 (1414 mg/L)	Yes	none	95%	916
	LF-4	9/94 – 11/02	NO_3+NO_2	none	No	n/a	92%	0.53
		9/94 – 11/02	SO_4	none	Yes	x^4	95%	316.6
		9/94 – 11/02	TDS	none	Yes	none	95%	717.4
	LF-5	9/94 – 9/00	NO_3+NO_2	none	Yes	ln(x)	95%	2.26
		9/94 – 9/00	SO_4	3/21/00 (41 mg/L) 6/6/97 (309 mg/L)	Yes	none	95%	210.3
		9/94 – 9/00	TDS	3/18/97 (396 mg/L) 6/6/97 (700 mg/L)	Yes	none	95%	575.8
	LF-6	9/94 – 11/02	NO_3+NO_2	9/28/94 (6.44 mg/L)	***	***	***	***
		9/94 – 11/02	SO_4	9/23/99 (23.1 mg/L)	No	n/a	92.8%	180
		9/94 – 11/02	TDS	none	Yes	square root(x)	95%	494
	LF-8	3/99 – 11/02	NO_3+NO_2	3/22/00 (<0.02 mg/L)	Yes	none	95%	4.55
		3/99 – 11/02	SO_4	none	Yes	none	95%	216
		3/99 – 11/02	TDS	none	Yes	none	95%	649
	LF-12	3/95 – 6/03	NO_3+NO_2	5/10/95 (4.66 mg/L)	Yes	none	95%	27.3
		3/95 – 6/03	SO_4	none	Yes	n/a	92%	185
		3/95 – 6/03	TDS	none	Yes	none	95%	734

*** - Nitrate Data for LF-6 could not be statistically analyzed due to a high percentage of non detectable concentrations

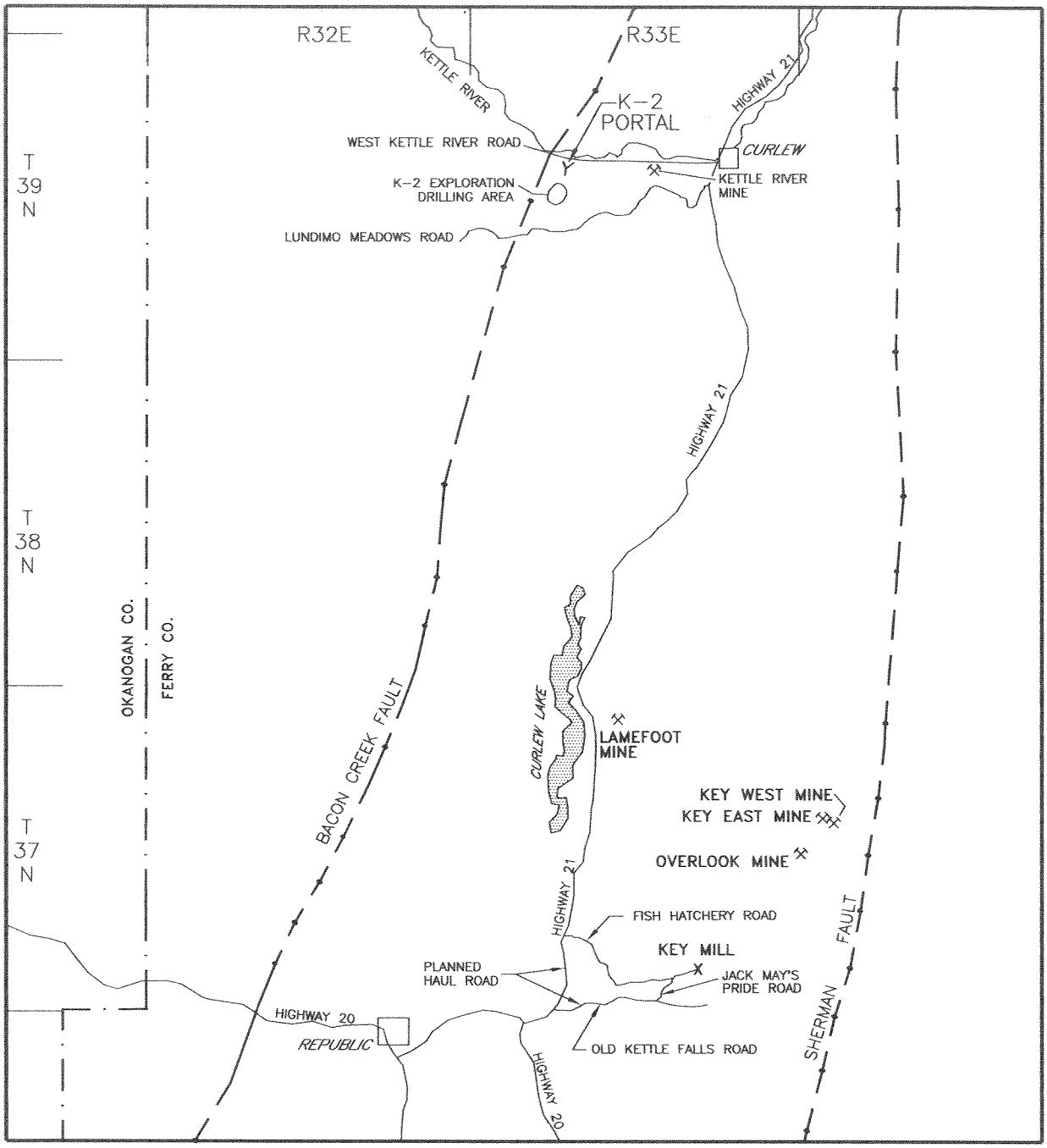


Figure 1 - Site Location (Ecology, 1992)

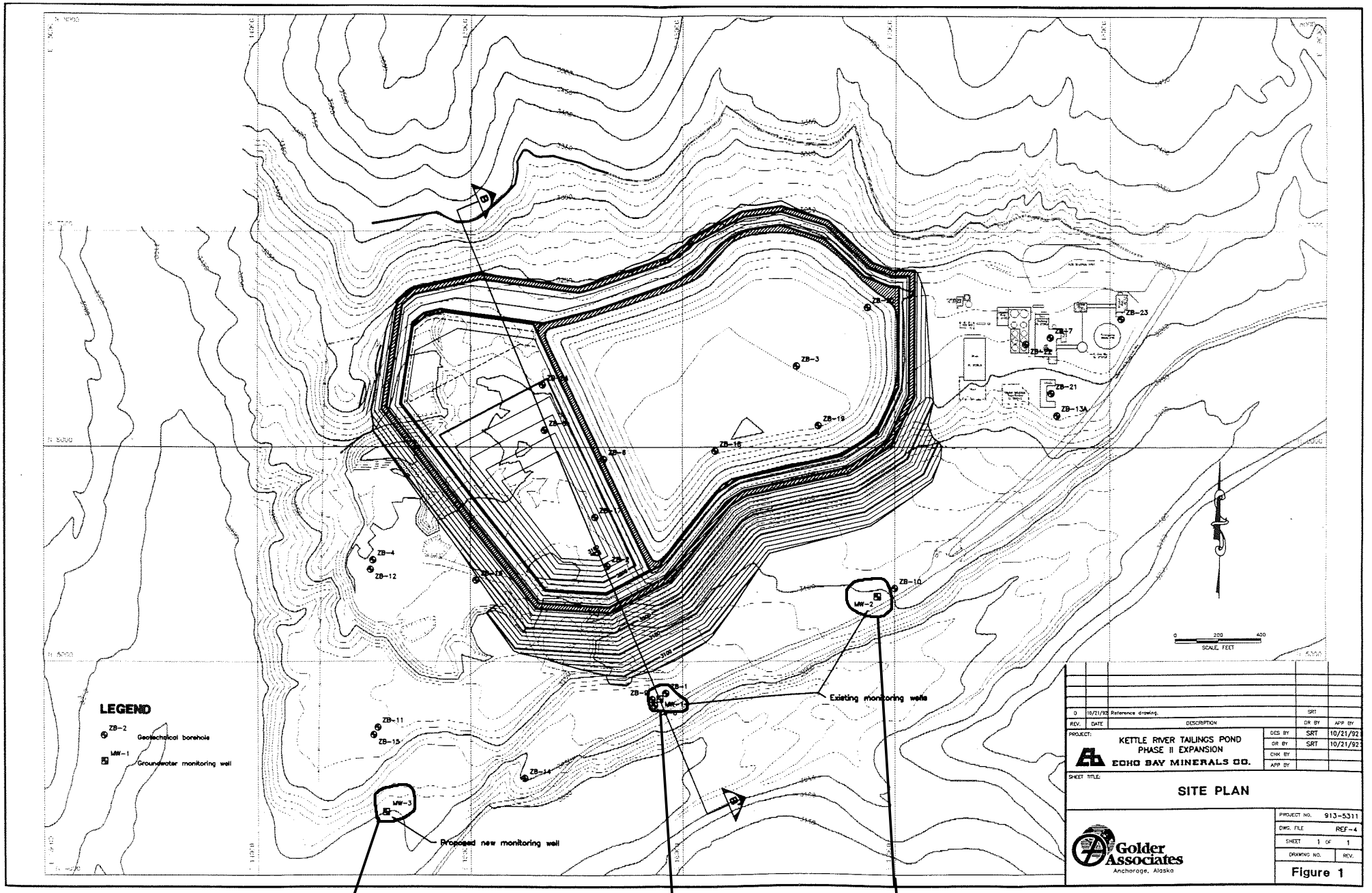


Figure 2 - Key Mill & Tailings Pond (Golder Associates, 1992)

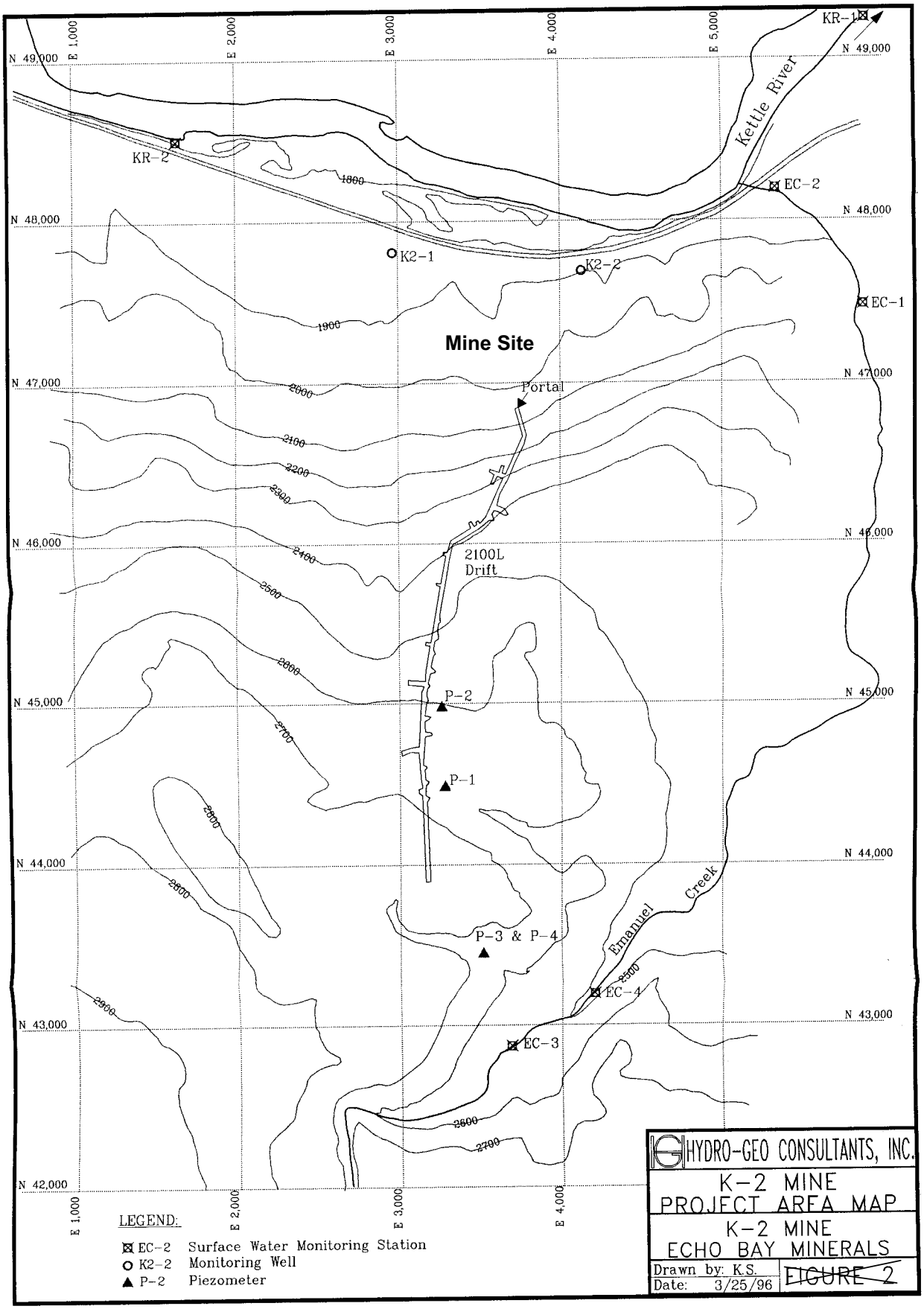


Figure 3 - K2 Mine Site Location (Hydro-Geo Consultants, 1996b)

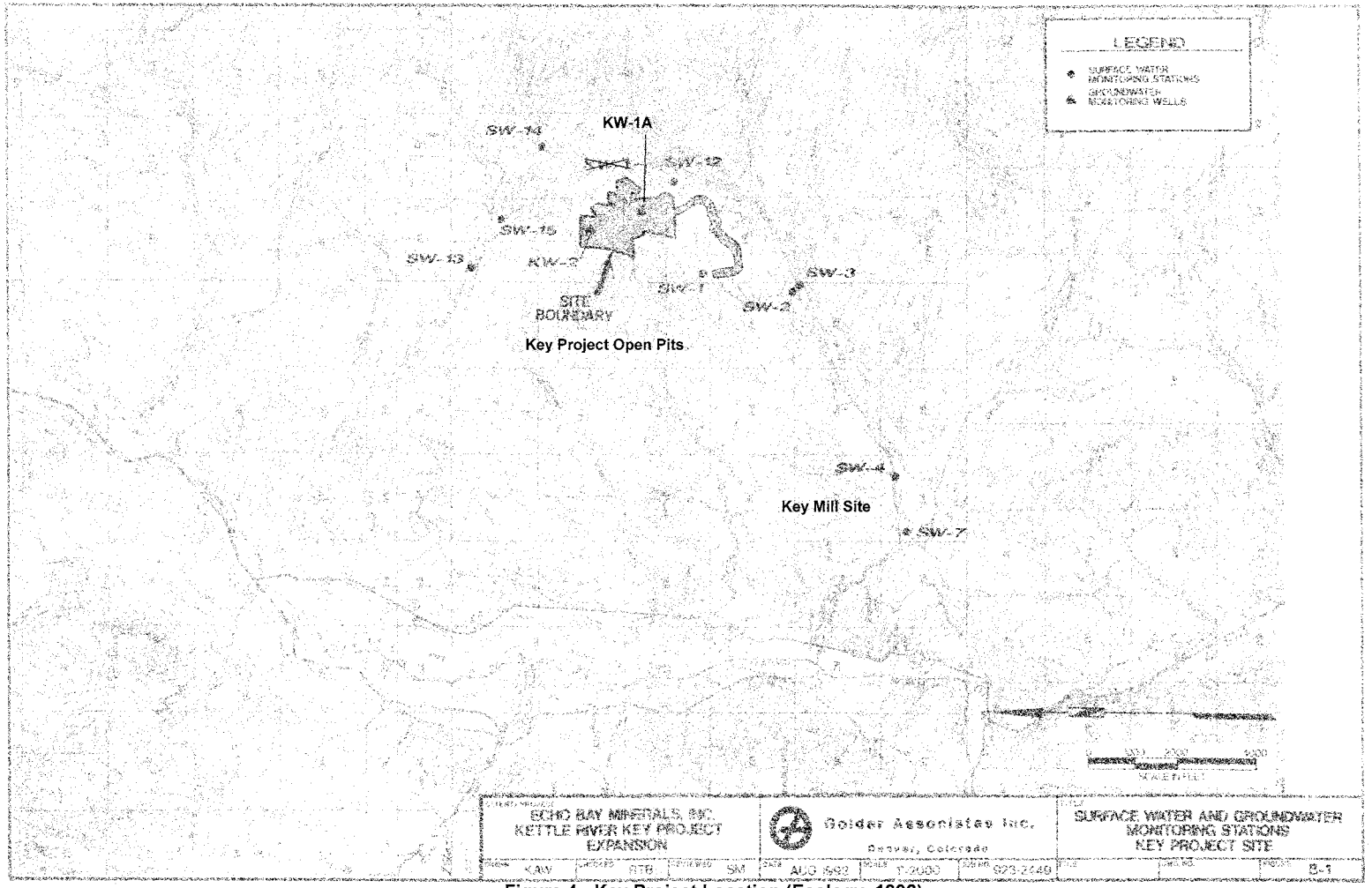


Figure 4 - Key Project Location (Ecology, 1992)

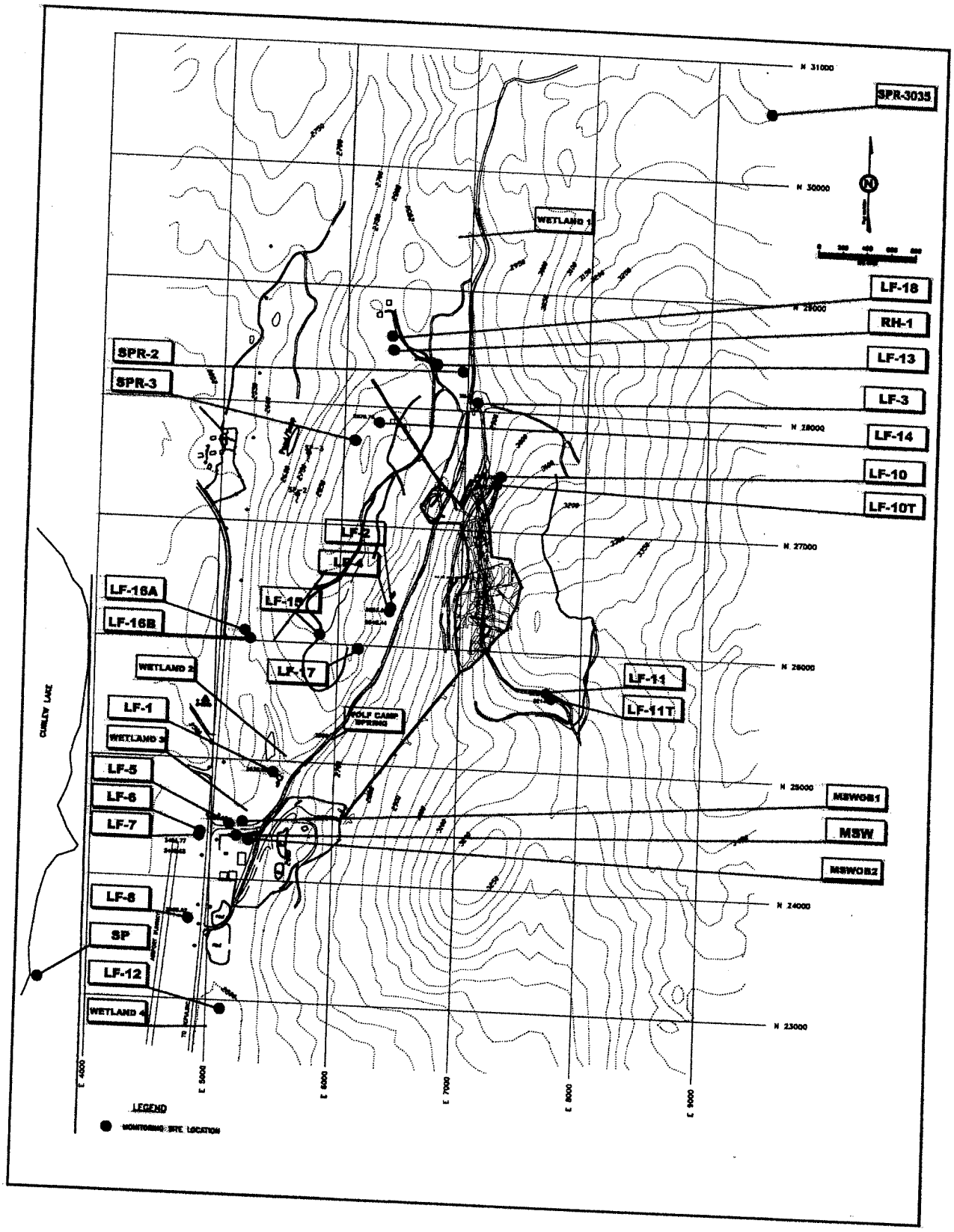


Figure 5 - Lamefoot Mine Site Location (EnviroData Solutions, 2002)

APPENDICES

APPENDIX A--PUBLIC INVOLVEMENT INFORMATION

The Department has tentatively determined to reissue a permit to the applicant listed on page 1 of this fact sheet. The permit contains conditions and effluent limitations which are described in the rest of this fact sheet.

Public notice of application was published on July 3, and 10, 2002 in both the Colville Statesmen Examiner and the Newport Miner to inform the public that an application had been submitted and to invite comment on the reassurance of this permit.

The Department will publish a Public Notice of Draft (PNOD) on October 16, 2003 in the Republic News Miner and October 15, 2003 in both the Colville Statesmen Examiner and the Newport Miner to inform the public that a draft permit and fact sheet are available for review. Interested persons are invited to submit written comments regarding the draft permit. The draft permit, fact sheet, and related documents are available for inspection and copying between the hours of 8:00 a.m. and 5:00 p.m. weekdays, by appointment, at the regional office listed below. Written comments should be mailed to:

Water Quality Permit Coordinator
Department of Ecology,
Eastern Regional Office,
4601 North Monroe, Suite 202,
Spokane, Washington 99205-1295.

Any interested party may comment on the draft permit or request a public hearing on this draft permit within the thirty (30) day comment period to the address above. The request for a hearing shall indicate the interest of the party and reasons why the hearing is warranted. The Department will hold a hearing if it determines there is a significant public interest in the draft permit (WAC 173-216-100). Public notice regarding any hearing will be circulated at least thirty (30) days in advance of the hearing. People expressing an interest in this permit will be mailed an individual notice of hearing.

Comments should reference specific text followed by proposed modification or concern when possible. Comments may address technical issues, accuracy and completeness of information, the scope of the facility's proposed coverage, adequacy of environmental protection, permit conditions, or any other concern that would result from issuance of this permit.

The Department will consider all comments received within thirty (30) days from the date of public notice of draft indicated above, in formulating a final determination to issue, revise, or deny the permit. The Department's response to all significant comments is available upon request and will be mailed directly to people expressing an interest in this permit.

Further information may be obtained from the Department by telephone, (509) 329-3400, or by writing to the address listed above.

APPENDIX B--GLOSSARY

Ambient Water Quality--The existing environmental condition of the water in a receiving water body.

Ammonia--Ammonia is produced by the breakdown of nitrogenous materials in wastewater. Ammonia is toxic to aquatic organisms, exerts an oxygen demand, and contributes to eutrophication. It also increases the amount of chlorine needed to disinfect wastewater.

Average Monthly Discharge Limitation--The average of the measured values obtained over a calendar month's time.

Best Management Practices (BMPs)--Schedules of activities, prohibitions of practices, maintenance procedures, and other physical, structural and/or managerial practices to prevent or reduce the pollution of waters of the State. BMPs include treatment systems, operating procedures, and practices to control: plant site runoff, spillage or leaks, sludge or waste disposal, or drainage from raw material storage. BMPs may be further categorized as operational, source control, erosion and sediment control, and treatment BMPs.

BOD_5--Determining the Biochemical Oxygen Demand of an effluent is an indirect way of measuring the quantity of organic material present in an effluent that is utilized by bacteria. The BOD_5 is used in modeling to measure the reduction of dissolved oxygen in a receiving water after effluent is discharged. Stress caused by reduced dissolved oxygen levels makes organisms less competitive and less able to sustain their species in the aquatic environment. Although BOD is not a specific compound, it is defined as a conventional pollutant under the federal Clean Water Act.

Bypass--The intentional diversion of waste streams from any portion of the collection or treatment facility.

Compliance Inspection - Without Sampling--A site visit for the purpose of determining the compliance of a facility with the terms and conditions of its permit or with applicable statutes and regulations.

Compliance Inspection - With Sampling--A site visit to accomplish the purpose of a Compliance Inspection - Without Sampling and as a minimum, sampling and analysis for all parameters with limits in the permit to ascertain compliance with those limits; and, for municipal facilities, sampling of influent to ascertain compliance with the 85 percent removal requirement. Additional sampling may be conducted.

Composite Sample--A mixture of grab samples collected at the same sampling point at different times, formed either by continuous sampling or by mixing discrete samples. May be "time-composite"(collected at constant time intervals) or "flow-proportional" (collected either as a constant sample volume at time intervals proportional to stream flow, or collected by increasing the volume of each aliquot as the flow increased while maintaining a constant time interval between the aliquots.

Construction Activity--Clearing, grading, excavation and any other activity which disturbs the surface of the land. Such activities may include road building, construction of residential houses, office buildings, or industrial buildings, and demolition activity.

Continuous Monitoring –Uninterrupted, unless otherwise noted in the permit.

Distribution Uniformity--The uniformity of infiltration (or application in the case of sprinkle or trickle irrigation) throughout the field expressed as a percent relating to the average depth infiltrated in the lowest one-quarter of the area to the average depth of water infiltrated.

Engineering Report--A document, signed by a professional licensed engineer, which thoroughly examines the engineering and administrative aspects of a particular domestic or industrial wastewater facility. The report shall contain the appropriate information required in WAC 173-240-060 or 173-240-130.

Grab Sample--A single sample or measurement taken at a specific time or over as short period of time as is feasible.

Igneous Rocks--Igneous rocks are formed by the cooling and crystallization of molten rock compounds as they cool. Extrusive refers to igneous rock which cool on the surface, while intrusive refers to igneous rocks which cool below the surface. Extrusive igneous rock are also referred to as volcanics.

Industrial Wastewater--Water or liquid-carried waste from industrial or commercial processes, as distinct from domestic wastewater. These wastes may result from any process or activity of industry, manufacture, trade or business, from the development of any natural resource, or from animal operations such as feed lots, poultry houses, or dairies. The term includes contaminated storm water and, also, leachate from solid waste facilities.

Maximum Daily Discharge Limitation--The highest allowable daily discharge of a pollutant measured during a calendar day or any 24-hour period that reasonably represents the calendar day for purposes of sampling. The daily discharge is calculated as the average measurement of the pollutant over the day.

Metamorphic Rocks--Metamorphic rocks are formed as a result of temperature and/or pressure which changes the structure, chemical makeup and/or mineralogy of the pre-existing rock. Metasediments are metamorphic rocks of sedimentary origin, and metavolcanics are metamorphic rocks of volcanic origin.

Method Detection Level (MDL)--The minimum concentration of a substance that can be measured and reported with 99% confidence that the analyte concentration is above zero and is determined from analysis of a sample in a given matrix containing the analyte.

pH--The pH of a liquid measures its acidity or alkalinity. A pH of 7 is defined as neutral, and large variations above or below this value are considered harmful to most aquatic life.

Quantification Level (QL)-- A calculated value five times the MDL (method detection level).

Sedimentary Rocks--Sedimentary rocks are formed by the consolidation of existing rock fragments or remains of plant and animals.

Soil Scientist--An individual who is registered as a Certified or Registered Professional Soil Scientist or as a Certified Professional Soil Specialist by the American Registry of Certified Professionals in Agronomy, Crops, and Soils or by the National Society of Consulting Scientists or who has the credentials for membership. Minimum requirements for eligibility are: possession of a baccalaureate, masters, or doctorate degree from a U.S. or Canadian institution with a minimum of 30 semester hours or 45 quarter hours professional core courses in agronomy, crops or soils, and have 5,3,or 1 years, respectively, of professional experience working in the area of agronomy, crops, or soils.

State Waters--Lakes, rivers, ponds, streams, inland waters, underground waters, salt waters, and all other surface waters and watercourses within the jurisdiction of the state of Washington.

Stormwater--That portion of precipitation that does not naturally percolate into the ground or evaporate, but flows via overland flow, interflow, pipes, and other features of a storm water drainage system into a defined surface water body, or a constructed infiltration facility.

Technology-based Effluent Limit--A permit limit that is based on the ability of a treatment method to reduce the pollutant.

Total Coliform Bacteria--A microbiological test which detects and enumerates the total coliform group of bacteria in water samples.

Total Dissolved Solids--That portion of total solids in water or wastewater that passes through a specific filter.

Total Suspended Solids (TSS)--Total suspended solids is the particulate material in an effluent. Large quantities of TSS discharged to a receiving water may result in solids accumulation. Apart from any toxic effects attributable to substances leached out by water, suspended solids may kill fish, shellfish, and other aquatic organisms by causing abrasive injuries and by clogging the gills and respiratory passages of various aquatic fauna. Indirectly, suspended solids can screen out light and can promote and maintain the development of noxious conditions through oxygen depletion.

Water Quality-based Effluent Limit--A limit on the concentration of an effluent parameter that is intended to prevent pollution of the receiving water.

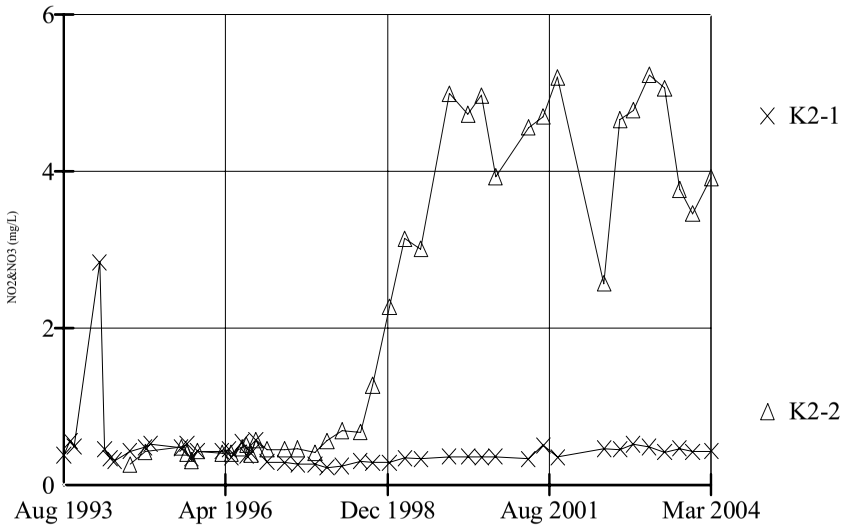
APPENDIX C-- WATER MONITORING RESULTS & TECHNICAL CALCULATIONS

K2 MINE, KEY MILL AND KEY PROJECT

SELECTED GROUND WATER QUALITY MONITORING RESULTS

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



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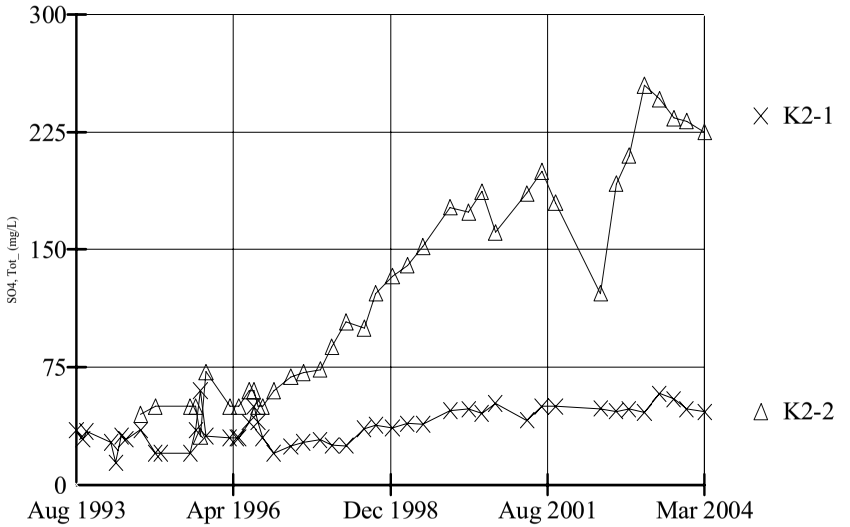
v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
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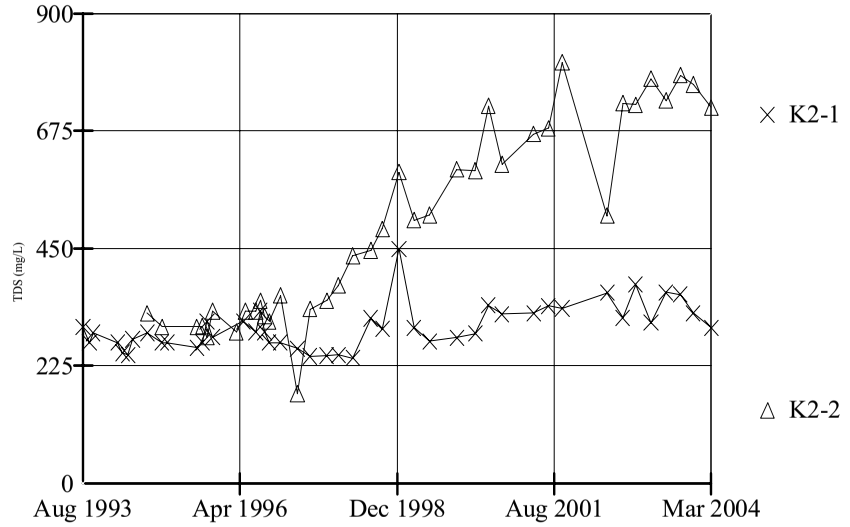

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 11:49 AM Client: Regulator View: data

Time Series

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 11:52 AM Client: Regulator View: data

	NO2&NO3 (mg/L)		SO4		TDS (mg/L)	
Date	K2-1	K2-2	K2-1	K2-2	K2-1	K2-2
08/05/93	0.38		34.8		299	
09/13/93	0.56		29		270	
10/06/93	0.49		34		288	
03/08/94	2.84		27		270	
04/06/94	0.45		14		250	
05/10/94	0.34		31		246	
06/07/94	0.31		29		276	
09/06/94	0.43	0.26	35	45	288	326
12/06/94	0.48	0.42	20	50	270	300
01/09/95	0.52		20		270	
07/10/95	0.47	0.48	20	50	260	300
08/15/95	0.52	0.4	35	50	270	301
09/11/95	0.34	0.31	60	31	310	280
10/17/95	0.43	0.43	31	72	280	330
03/12/96	0.43	0.4	30	50		290
04/23/96	0.45		30		310	
05/07/96	0.35	0.4	30	50		330
07/10/96	0.54	0.47	40	60	290	330
08/07/96	0.38	0.51	50	60	330	350
09/03/96	0.4	0.39	40	50	290	320
10/01/96	0.57	0.57	30	50	270	310
12/08/96	0.29	0.45	20	60	270	360
03/24/97	0.28	0.45	24.5	68.9	258	172
06/10/97	0.26	0.46	27.1	71.5	243	334
09/22/97	0.26	0.41	28.5	73.5	245	350
12/04/97	0.22	0.56	25	88	246	379
03/03/98	0.24	0.69	24.9	104	240	436
06/22/98	0.3	0.67	35.7	100	316	446
09/03/98	0.28	1.27	38.1	122	296	487
12/14/98	0.28	2.27	36.3	133	449	596
03/17/99	0.34	3.14	39	140	298	504
06/21/99	0.33	3.01	38.6	152	272	514
12/08/99	0.36	4.99	47.3	177	279	601
03/31/00	0.36	4.73	48.2	174	287	599
06/20/00	0.35	4.97	45.5	187	341	723
09/12/00	0.36	3.93	51.9	161	324	611
03/27/01	0.33	4.56	41.1	186	326	669
06/25/01	0.5	4.7	50	200	340	680
09/20/01	0.35	5.2	50	180	335	806
06/26/02	0.46	2.57	48.7	122	365	513
09/30/02	0.453	4.66	46.9	192	317	728
12/18/02	0.518	4.78	48.3	210	381	725
03/24/03	0.483	5.23	46.2	255	308	775
06/24/03	0.416	5.06	58	246	366	733
09/22/03	0.464	3.77	54.5	234	362	782
12/10/03	0.422	3.46	48.3	232	326	764
03/31/04	0.428	3.92	46.4	225	298	720

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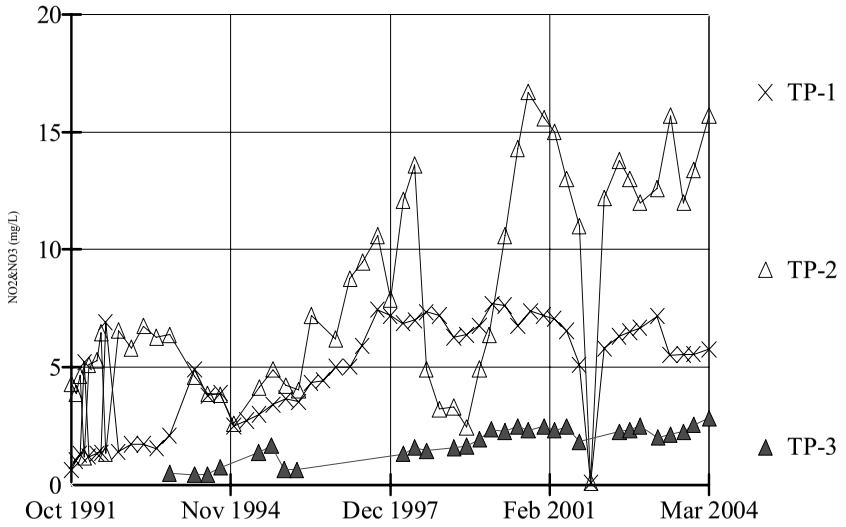
TIME SERIES



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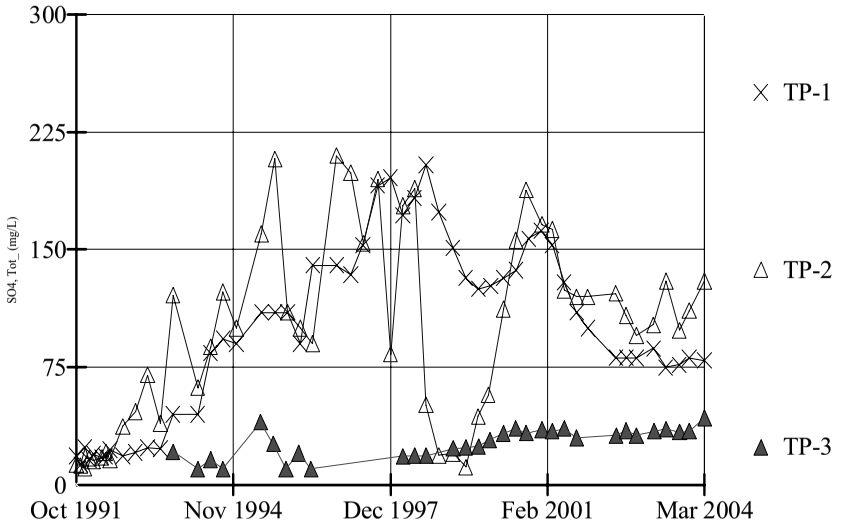
TIME SERIES



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v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

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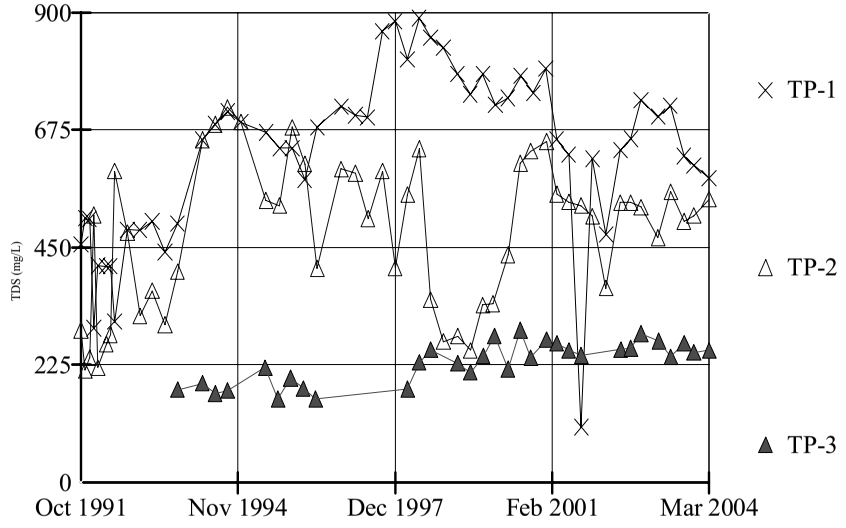

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:05 PM Client: Regulator View: data

Time Series

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 1:06 PM Client: Regulator View: data

	NO2&NO3 (mg/L)			SO4			TDS (mg/L)		
Date	TP-1	TP-2	TP-3	TP-1	TP-2	TP-3	TP-1	TP-2	TP-3
10/01/91	0.63	4.29		18.3	12.8		456	292	
11/01/91	1.03	3.89		12.7	12.3		506	215	
12/01/91	1.3	4.64		23.7	10.7		504	239	
01/01/92	5.22	1.18		15.6	16.9		295	512	
02/01/92	1.2	5.11		19.5	15.3		415	220	
04/01/92	1.32	5.29		17.3	17.3		414	265	
05/01/92	1.37	6.47		17.9	20.7		414	283	
06/01/92	6.9	1.32		22.4	16		308	596	
09/01/92	1.4	6.56		18.4	37.3		484	478	
12/01/92	1.73	5.81		20.7	46.7		483	319	
03/01/93	1.72	6.75		23.6	70.1		500	367	
06/01/93	1.55	6.27		23	39.1		441	302	
09/01/93	2.1	6.38	0.49	45	121	21	496	404	178
03/01/94	4.9	4.6	0.43	45	62	10	656	656	190
06/01/94	3.79	3.87	0.44	84	88	16	686	686	170
09/01/94	3.9	3.83	0.73	93	123	10	710	718	176
12/06/94	2.5	2.6		90	100		690	690	
03/07/95	2.73								
06/01/95			1.38			40			220
06/06/95	3	4.14		110	160		670	540	
09/01/95			1.66			26			160
09/13/95	3.41	4.9		110	208		640	530	
12/01/95			0.64			10			200
12/13/95	3.65	4.22		110	110		640	680	
03/01/96			0.63			20			180
03/13/96	3.52	4.03		90	100		580	610	
06/01/96						10			160
06/12/96	4.33	7.2		140	90		680	410	
09/05/96	4.44								
12/04/96	5	6.2		140	210		720	600	
03/17/97	5.01	8.77		134	199		703	592	
06/11/97	5.91			153			699		
06/16/97		9.48			154			505	
09/29/97	7.44	10.6		191	195		864	596	
12/31/97	7.19	7.89		196	83.4		883	411	
03/30/98	6.86			172			810		
03/31/98		12.1	1.31		178	18.2		551	179
06/23/98	7	13.6	1.58	183	189	18.5	889	639	230
09/14/98	7.34	4.9		204	50.9		852	350	
09/15/98			1.44			18.6			254
12/16/98	7.2	3.22		174	18.8		832	270	
03/29/99	6.28	3.31		151	19.9		782	280	
03/31/99			1.57			23.1			228
06/29/99	6.38	2.45		132	11.3		743	253	
06/30/99			1.65			23.8			211
09/29/99	6.77	4.93		125	43.7		782	340	
09/30/99			1.93			24.5			242
12/09/99		6.37			57.3			342	
12/22/99			2.35			28.5			281
12/29/99	7.69			127			723		
03/28/00		10.6	2.26		112	32.8		436	217
03/29/00	7.62			132			736		
06/28/00		14.3	2.48		156	35.8		611	292
06/29/00	6.76			137			778		
09/12/00		16.7	2.32		188	33		634	239
09/29/00	7.38			157			746		
12/29/00	7.2			162			792		
01/03/01		15.6	2.48		166	35.1		653	273
03/19/01	7.06	15	2.32	153	163	34.1	657	552	266
06/13/01			2.47			35.8			253
06/14/01	6.55	13		129	124		627	537	
09/12/01	5.1	11	1.83	110	120	30	106	530	243
12/04/01	0.08	0.1		100	120		620	510	
03/12/02	5.8	12.2					475	372	
06/25/02	6.31	13.8		81.1	122		636	536	
06/26/02			2.25			31.5			255
09/09/02	6.51	13	2.33	81.1	108	34.5	658	536	257
11/21/02	6.67	12	2.49	80.9	95.3	31.4	732	527	285
03/24/03	7.18	12.6		86.9	102		700	469	
03/31/03			2.01			34.1			271
06/23/03	5.51			74.8			721		
06/26/03		15.7	2.14		130	35.6		557	241

Time Series (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 1:06 PM Client: Regulator View: data

	NO2&NO3 (mg/L)			SO4			TDS (mg/L)		
Date	TP-1	TP-2	TP-3	TP-1	TP-2	TP-3	TP-1	TP-2	TP-3
09/29/03	5.54	12		76.6	98.5		625	500	
09/30/03			2.25			33.6			266
12/10/03	5.55	13.4	2.55	80.8	111	34.1	607	511	249
03/30/04	5.76	15.7		79.2	130		583	542	
03/31/04			2.83			42.6			253

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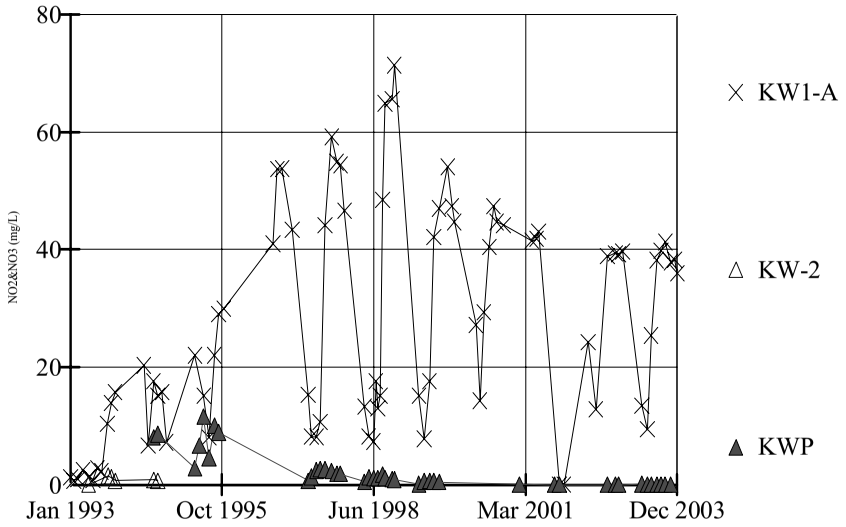
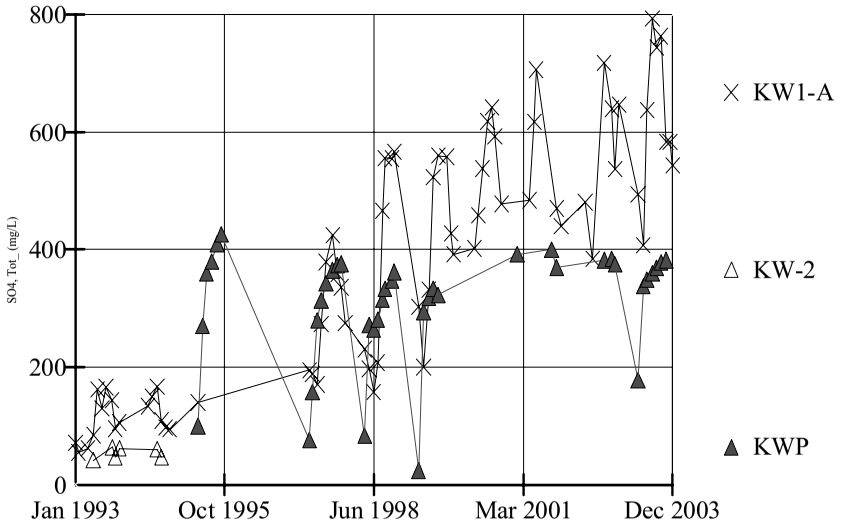
TIME SERIES



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 12:55 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

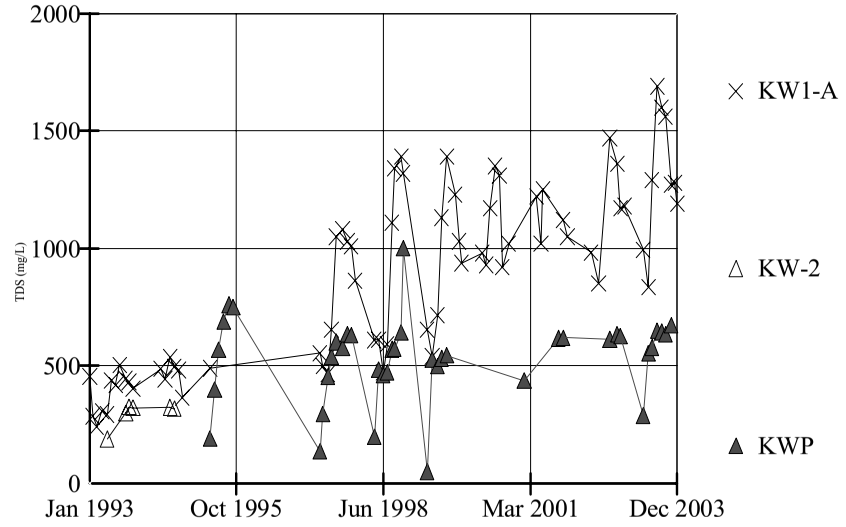
TIME SERIES



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 12:55 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 12:56 PM Client: Regulator View: data

Box & Whiskers Plot

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:50 PM Client: Regulator View: data

Date	NO2&NO3 (mg/L) KW1-A	SW-12	SW-16	SW-2	SW-3	SW-4	SW-7	SO4 KW1-A	SW-12	SW-16
01/13/93	1.25							71.7		
02/03/93	0.67							55.1		
03/02/93	0.98									
04/06/93	2.5		2.37					62		89
05/12/93	1.27	0.66	0.67					84.2	90.8	98.2
06/09/93	0.85	0.27	0.26					162	91.2	93.3
07/08/93	2.78	0.15	0.11					130	93.3	95.3
08/05/93	2.27	1.6	1.65					166	98	96
09/13/93	10.39	1.85	1.91					144	115	100
10/06/93	13.9	2.37	2.36					95	88	101
11/02/93	15.75		13					106		128
05/10/94	20.3	4.75	4.7					134	132	130
06/08/94	6.7	2.31	<0.02					150	123	111
07/12/94	17.6	1.58	1.55					167	128	128
08/09/94	15.12		10.15					109		140
09/07/94	15.8							97		
10/04/94	7.2							94		
04/10/95	22	12.8	20					140	130	160
06/06/95	15.1									
07/11/95	8.1									
08/16/95	22									
09/13/95	29									
10/17/95	30									
09/04/96	41									
10/02/96	53.7									
11/03/96	53.8									
01/08/97	43.4									
03/17/97						0.28	0.28			
04/23/97	15.3	16.8	51.7					195	265	523
05/13/97	8.18	9.86	35.6					189	229	435
06/11/97				4.51	0.05	0.12	0.12			
06/16/97	8.14	8.67	20.1					171	194	298
07/10/97	10.7	7.23	16.3					273	172	242
08/11/97	44.2	9.315 D	24.1					379	183.5 D	276
09/22/97				2.15	0.08	0.19	0.19			
09/24/97	59.2	14.6	36.9					425	218	353
10/27/97	54.9	16.8	42.6					359	226	355
11/20/97	54.4	17.5	46					336	213	363
12/03/97				2.61	0.82	0.29	0.28			
12/17/97	46.6	18.2	50.1					275	223	377
03/03/98						0.3	0.3			
04/27/98	13.3	47.7	13.75 D					231	579	273 D
05/26/98	8.25	41.4	9.02					197	638	246
06/23/98				3.09	0.11	0.21	0.21			
06/25/98	7.34	55.1	10.4					158	684	233
07/12/98	17.6									
07/23/98	13	27.7	13.7					208	351	236
08/09/98	15.12									
08/24/98	48.5	36.8	21.2					466	402	140
09/09/98	64.9	42.2	17.2	1.48	0.1	0.23	0.22	556	425	254
10/27/98	65.6	51.2	22.4					555	484	285
11/09/98	71.4	55.2	25.9					567	525	308
12/16/98				2.61	0.12	0.26	0.27			
03/16/99				3.03	0.08	0.33	0.28			
04/20/99	15.2	49.3 D	20.1 D					303	689 D	324 D
05/25/99	7.82	29.5	9.18					200	553	262
06/29/99	17.6	13.4	7.74	2.98	<0.05	0.06	0.07	332	293	223
07/27/99	42.2	18.4 D	8.55 D					523	330 D	223 D
08/31/99	47	26.9	9.14					560	412	242
10/26/99	54.1	37.4						558	533	
11/22/99			14.3							296
11/23/99	47.4	39.8						428	547	
12/08/99				1.85	0.13	0.26	0.27			
12/09/99	44.7	38.5						392	540	
03/20/00						0.28	0.29			
04/28/00	27.2	42.5	18.2					402	864	413
05/24/00	14.3	11.4	26.9					459	350	680
06/20/00	29.3	13.2	9.72	3.59	0.05			538	344	320
06/28/00						0.06	0.07			
07/24/00	40.4	21	8.84					618	421	282
08/22/00	47.4	26.9						642	522	
09/11/00	44.7	29.8	8.41		0.1	0.15	0.2	593	570	304

D = Average of Duplicate or Split observations.

Box & Whiskers Plot (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:50 PM Client: Regulator View: data

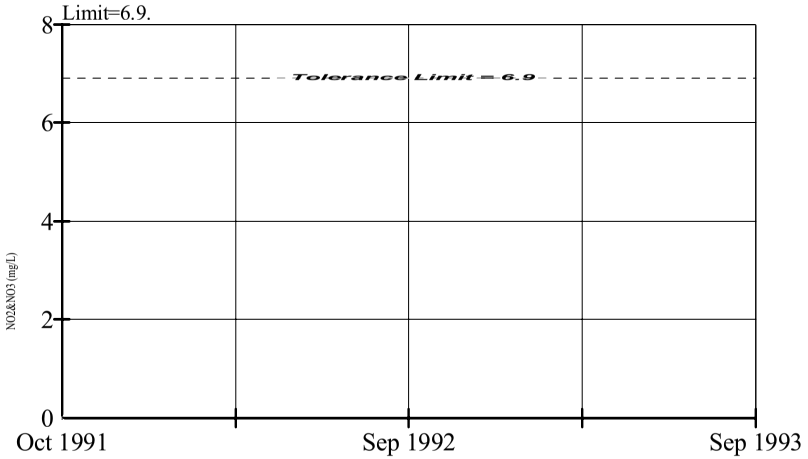
	NO2&NO3 (mg/L)							SO4		
Date	KW1-A	SW-12	SW-16	SW-2	SW-3	SW-4	SW-7	KW1-A	SW-12	SW-16
10/25/00	44.2	35.9	9.23					478	570	319
01/03/01						0.31	0.34			
03/19/01						0.23	0.22			
04/30/01	41.5	29.3	17					484	692	454
05/31/01	41.8	19.9	17.3					617	463	462
06/13/01	43.1	19.9	16		0.06	<0.05	<0.05	706	449	452
07/18/01		21.3	10.6						540	420
10/29/01	0.08	34.2	8.9					470	640	390
11/27/01	0.06	32.6	<0.05					440	640	400
12/04/01					0.08	0.18	0.05			
03/12/02							0.27			
05/06/02	24.3	12	14.6					481	387	465
06/25/02	12.8	6.84	10.9		<0.05	<0.05	<0.05	384	341	335
09/09/02	38.9		22.6		<0.05	0.15	0.19	718		580
10/31/02	39.4		27.7					640		644
11/20/02					<0.05	0.102	0.138			
11/21/02	39.2		28.3					537		625
12/18/02	39.7		18.7					647		633
03/24/03					0.055		0.155			
03/31/03				2.18						
04/23/03	13.5	11.6	29.1					494	430	837
05/29/03	9.39	6.43	9.81					408	338	398
06/23/03	25.4	5.52	11.8	1.8				637	324	405
06/24/03						<0.05	0.066			
07/29/03	38.2	5.05	19.2					793	336	533
08/27/03	39.8		23.7					744		590
09/23/03	41.3		25.7			0.168	0.222	763		652
10/30/03	37.9		30					584		706
11/24/03	38.3		30.9					583		718
12/10/03						0.236	0.282			
12/11/03	36		30.8					543		698
03/30/04						0.145	0.185			

D = Average of Duplicate or Split observations.

K2 MINE, KEY MILL AND KEY PROJECT

GROUND WATER ENFORCEMENT LIMITS

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-1

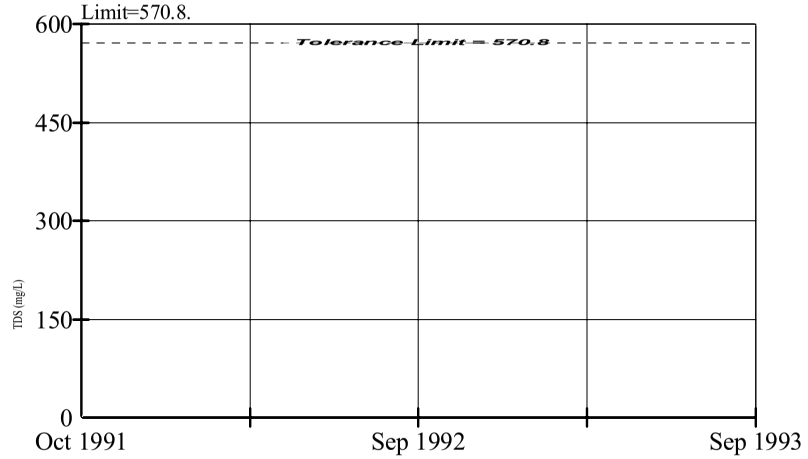


Testwise alpha = 0.5133.
13 background observations. 70.12% coverage at alpha=0.01; 79.49% at alpha=0.05; 94.73% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:20 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-1

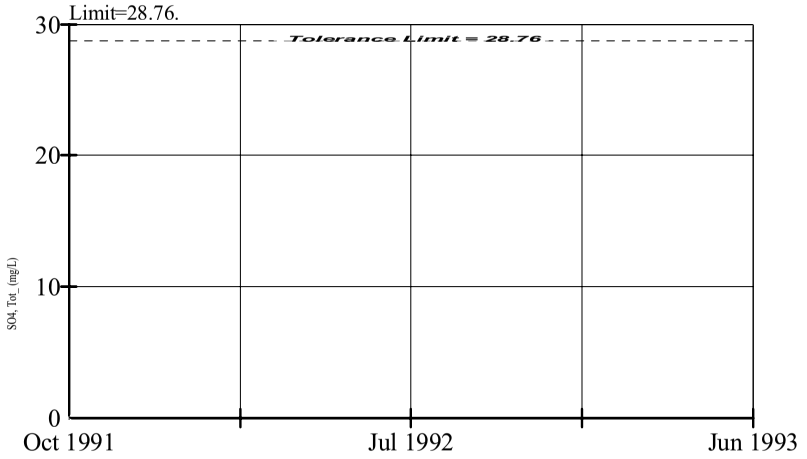


95% coverage. Background Data Summary: (based on cube(x) transformed data) Mean=9.1E+7, Std. Dev=3.6E+7, 0% nds, 13 c
test used: Shapiro Wilk. W Statistic for background data = 0.887, W Quantile = 0.866. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:21 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

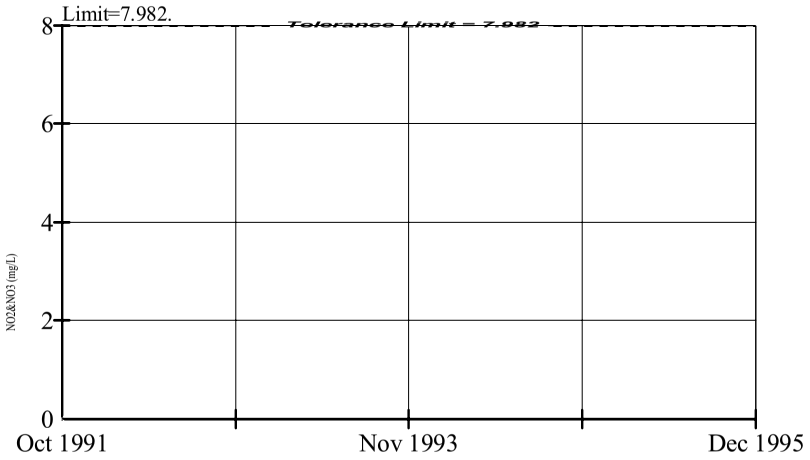
PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-1



95% coverage. Background Data Summary: Mean=19.43, Std. Dev=3.411, 0% nds, 12 obs. Normality test used: Shapiro Wilk.
for background data = 0.9435, W Quantile = 0.859. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:21 PM Client: Regulator View: data

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-2

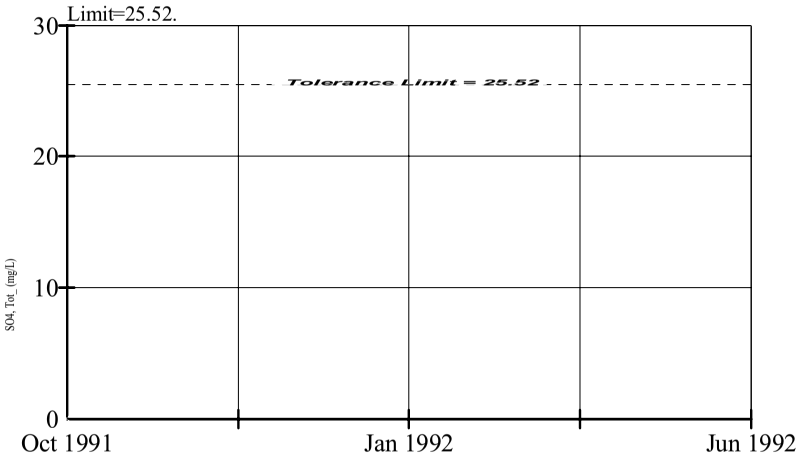


95% coverage. Background Data Summary: Mean=4.979, Std. Dev=1.181, 0% nds, 18 obs. Normality test used: Shapiro Wilk. W for background data = 0.942, W Quantile = 0.897. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:29 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-2

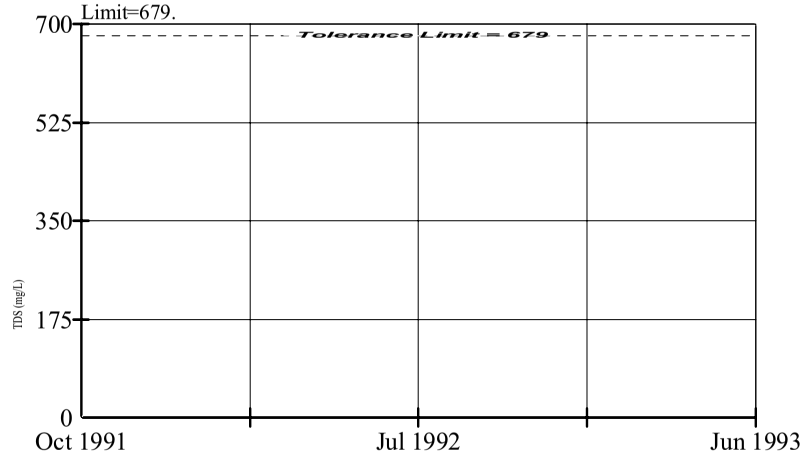


95% coverage. Background Data Summary: Mean=15.25, Std. Dev=3.22, 0% nds, 8 obs. Normality test used: Shapiro Wilk. W for background data = 0.9691, W Quantile = 0.818. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:30 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

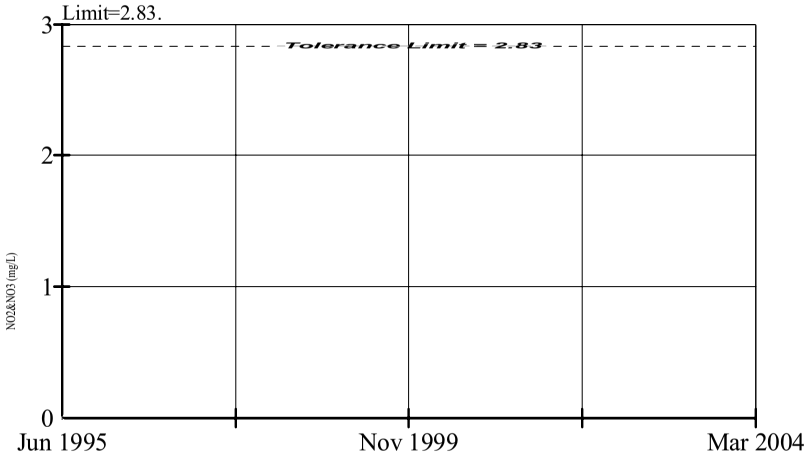
PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-2



95% coverage. Background Data Summary: Mean=340.7, Std. Dev=123.6, 0% nds, 12 obs. Normality test used: Shapiro Wilk. for background data = 0.8658, W Quantile = 0.859. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:31 PM Client: Regulator View: data

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-3

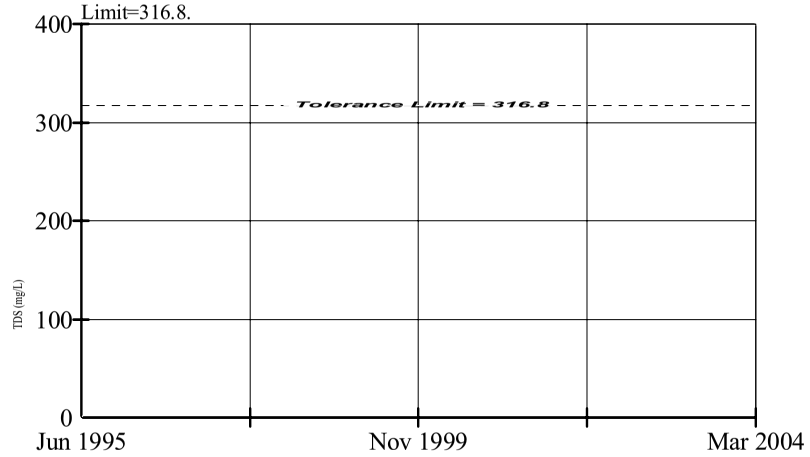


Testwise alpha = 0.2146.
30 background observations. 85.74% coverage at alpha=0.01; 90.43% at alpha=0.05; 97.85% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/17/04, 1:52 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-3

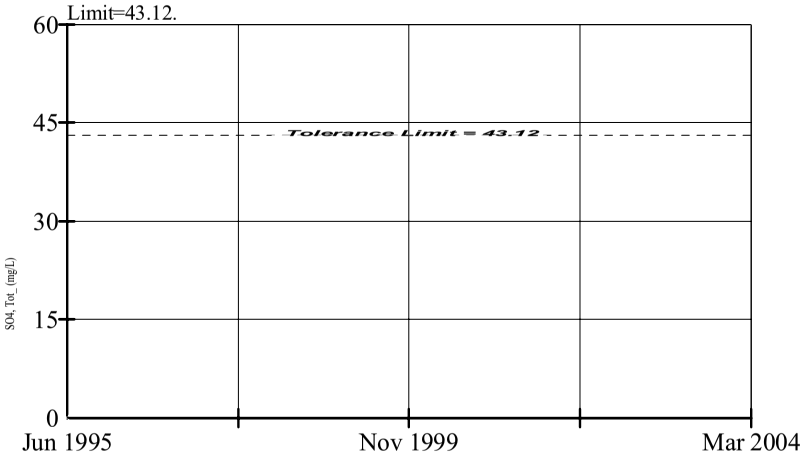


95% coverage. Background Data Summary: Mean=229.6, Std. Dev=39.46, 0% nds, 31 obs. Normality test used: Shapiro Wilk. for background data = 0.9308, W Quantile = 0.929. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/17/04, 1:53 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-3

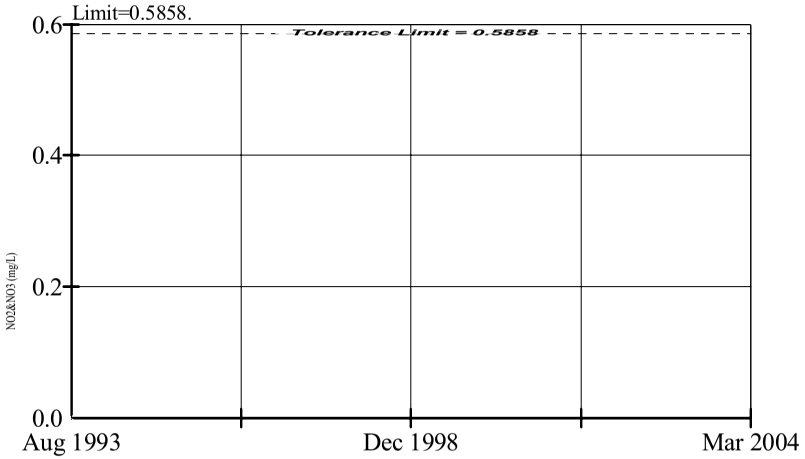


95% coverage. Background Data Summary: (based on square(x) transformed data) Mean=807.5, Std. Dev=475.9, 0% nds, 31 ob test used: Shapiro Wilk. W Statistic for background data = 0.9355, W Quantile = 0.929. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/17/04, 1:53 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-1

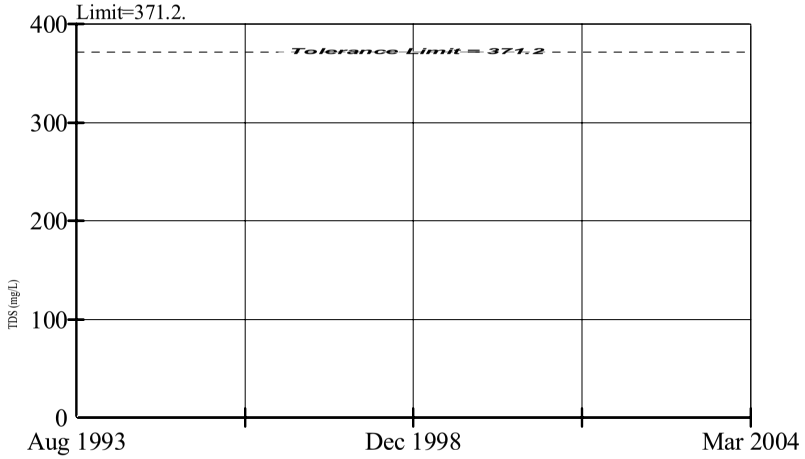


95% coverage. Background Data Summary: Mean=0.3951, Std. Dev=0.09141, 0% nds, 46 obs. Normality test used: Shapiro Wi
W Statistic for background data = 0.9649, W Quantile = 0.945. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:55 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-1

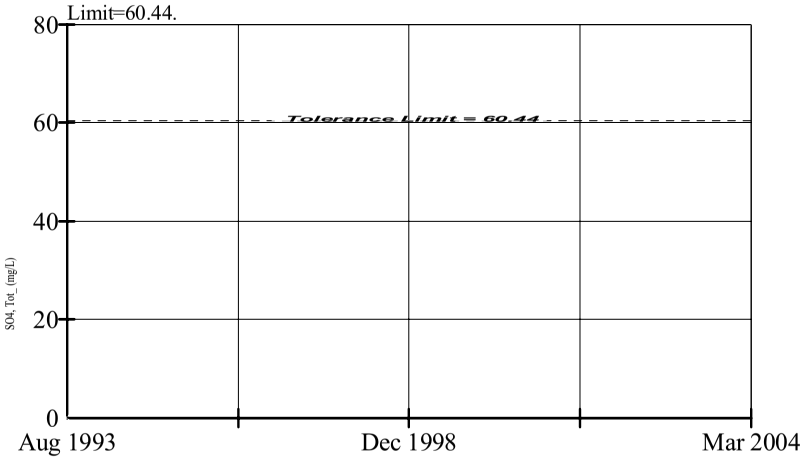


95% coverage. Background Data Summary: Mean=294.9, Std. Dev=36.33, 0% nds, 44 obs. Normality test used: Shapiro Wilk.
for background data = 0.947, W Quantile = 0.944. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:56 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-1

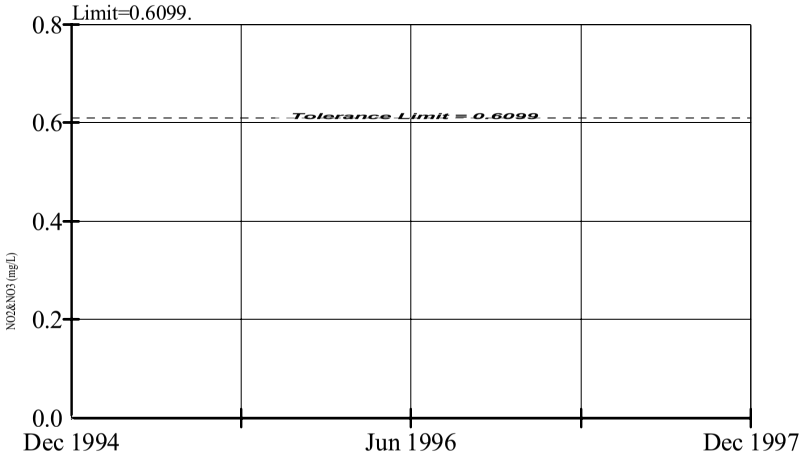


95% coverage. Background Data Summary: Mean=37, Std. Dev=11.26, 0% nds, 47 obs. Normality test used: Shapiro Wilk. W
for background data = 0.9641, W Quantile = 0.946. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:56 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-2

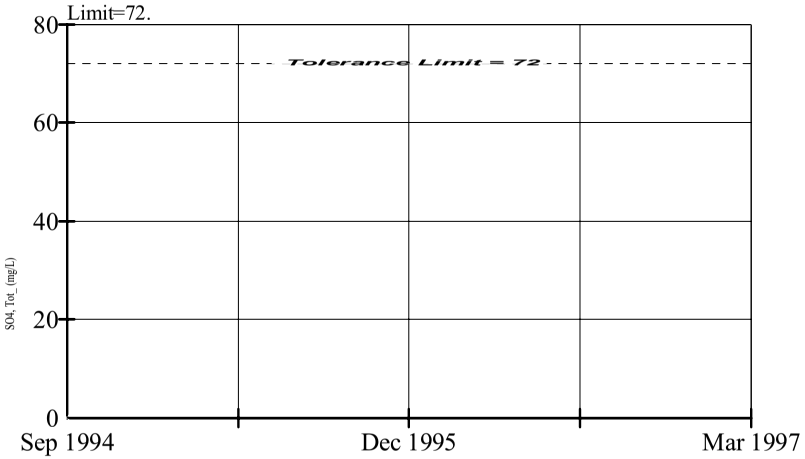


95% coverage. Background Data Summary: Mean=0.4444, Std. Dev=0.06562, 0% nds, 16 obs. Normality test used: Shapiro Wi
W Statistic for background data = 0.9518, W Quantile = 0.887. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:03 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-2

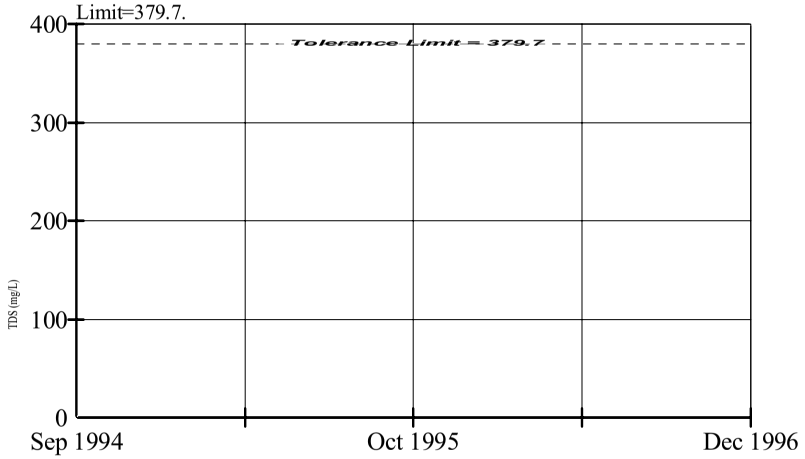


Testwise alpha = 0.5133.
13 background observations. 70.12% coverage at alpha=0.01; 79.49% at alpha=0.05; 94.73% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:04 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

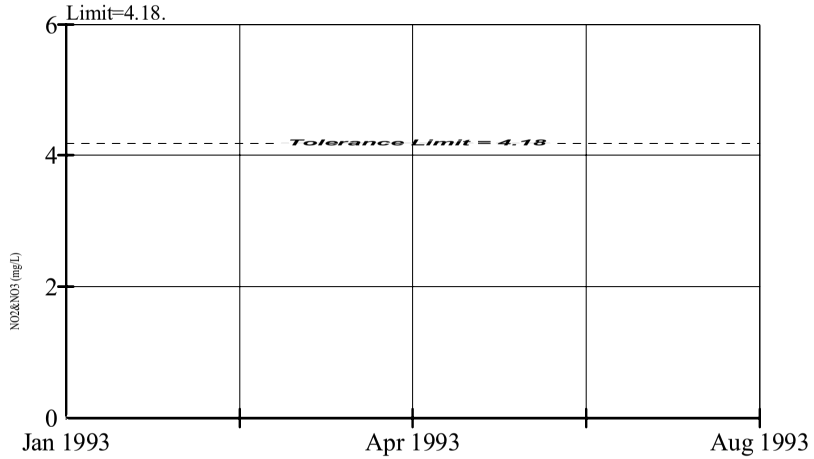
PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-2



95% coverage. Background Data Summary: Mean=317.5, Std. Dev=23.3, 0% nds, 13 obs. Normality test used: Shapiro Wilk. V
for background data = 0.9638, W Quantile = 0.866. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:07 PM Client: Regulator View: data

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
KW1-A

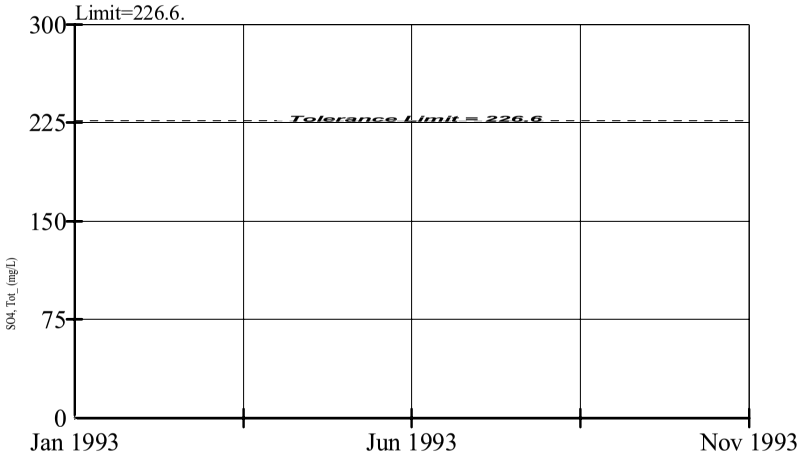


95% coverage. Background Data Summary: Mean=1.571, Std. Dev=0.8184, 0% nds, 8 obs. Normality test used: Shapiro Wilk. for background data = 0.8747, W Quantile = 0.818. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:41 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
KW1-A

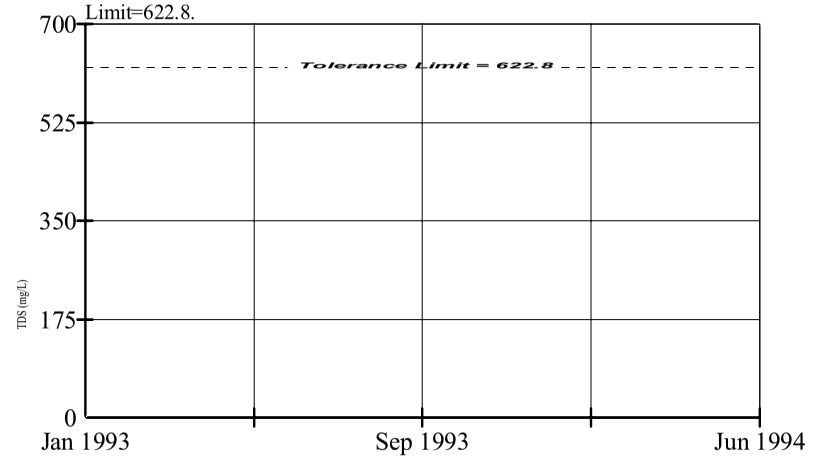


95% coverage. Background Data Summary: Mean=107.6, Std. Dev=40.87, 0% nds, 10 obs. Normality test used: Shapiro Wilk. for background data = 0.9277, W Quantile = 0.842. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:42 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
KW1-A



95% coverage. Background Data Summary: Mean=396.8, Std. Dev=84.63, 0% nds, 13 obs. Normality test used: Shapiro Wilk. for background data = 0.8817, W Quantile = 0.866. Testwise alpha = 0.05.

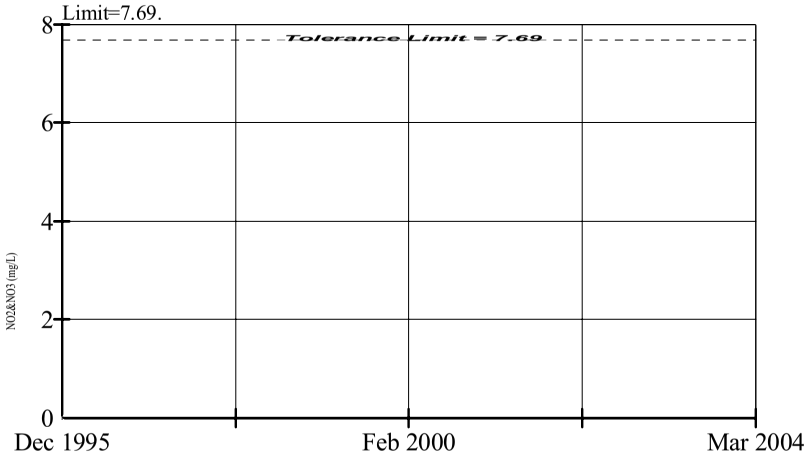
Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:43 PM Client: Regulator View: data

K2 MINE, KEY MILL AND KEY PROJECT

INTERIM GROUND WATER ENFORCEMENT LIMITS

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-1

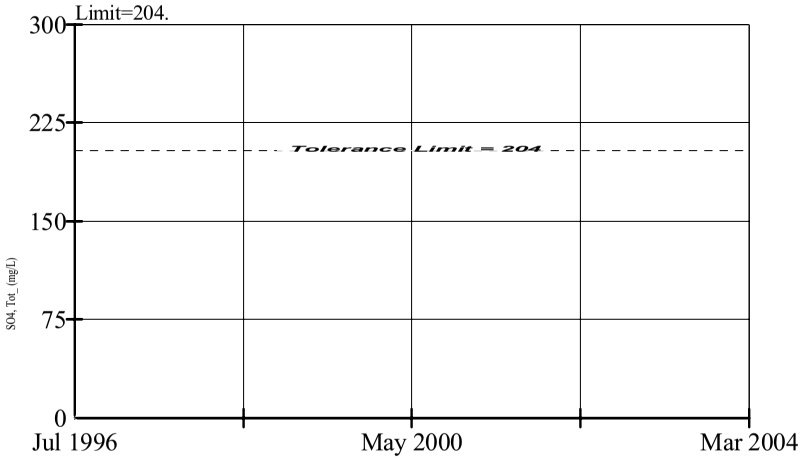


Testwise alpha = 0.1285.
40 background observations. 89.26% coverage at alpha=0.01; 92.77% at alpha=0.05; 98.24% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:11 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-1

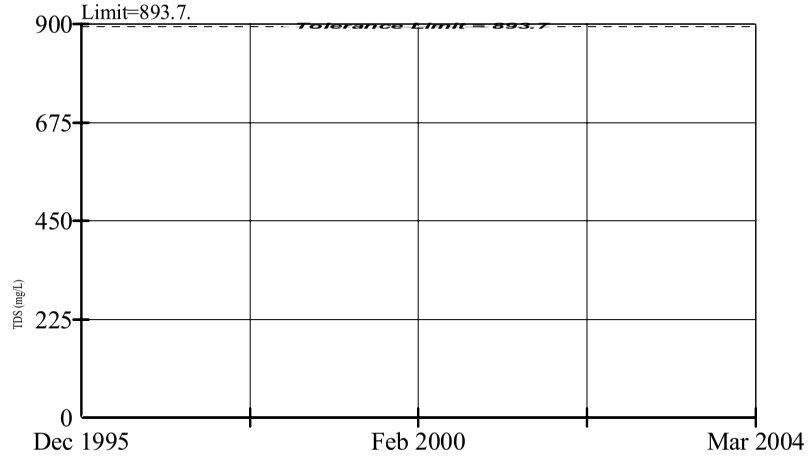


Testwise alpha = 0.1499.
37 background observations. 88.48% coverage at alpha=0.01; 92.38% at alpha=0.05; 98.24% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:11 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-1

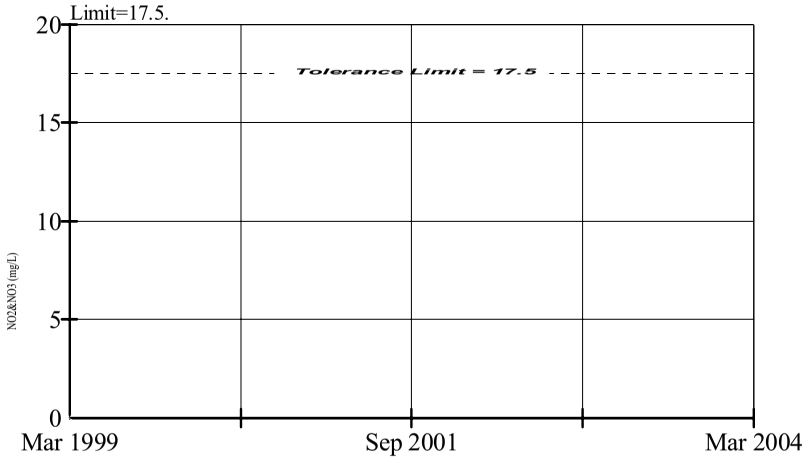


95% coverage. Background Data Summary: Mean=714.9, Std. Dev=83.13, 0% nds, 37 obs. Normality test used: Shapiro Wilk.
for background data = 0.9546, W Quantile = 0.936. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:12 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-2

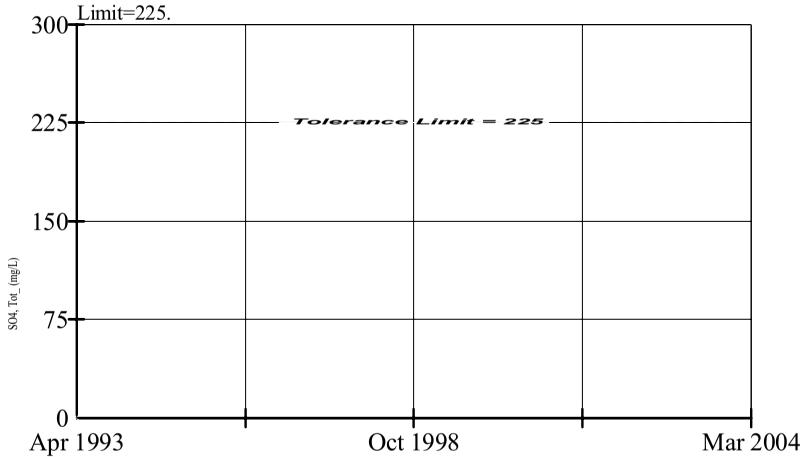


95% coverage. Background Data Summary: (based on square(x) transformed data) Mean=125.1, Std. Dev=81.94, 0% nds, 31 ob test used: Shapiro Wilk. W Statistic for background data = 0.9397, W Quantile = 0.929. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:21 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-2

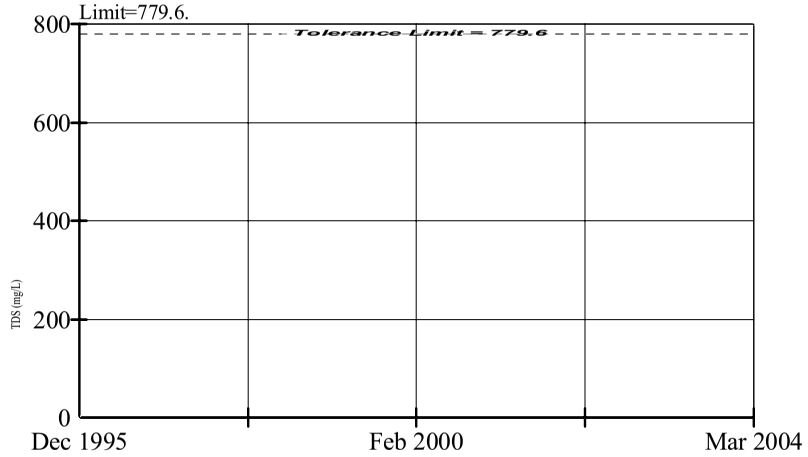


95% coverage. Background Data Summary: Mean=114.3, Std. Dev=52.4, 0% nds, 42 obs. Normality test used: Shapiro Wilk. W for background data = 0.9587, W Quantile = 0.942. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:22 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
TP-2

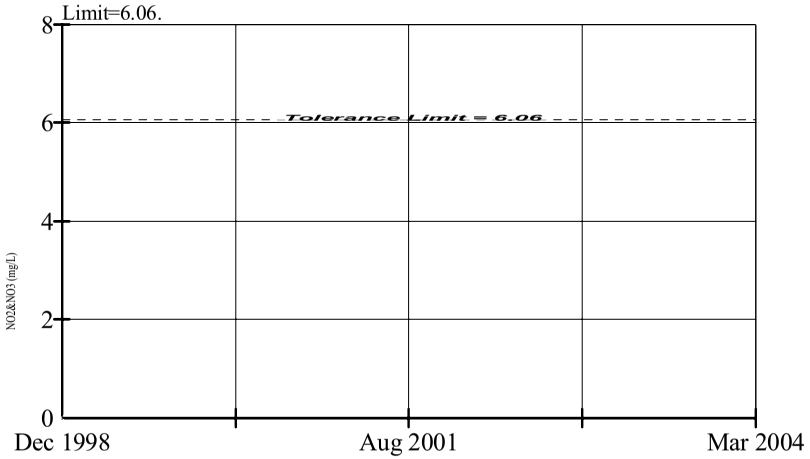


95% coverage. Background Data Summary: Mean=519.5, Std. Dev=121.9, 0% nds, 39 obs. Normality test used: Shapiro Wilk. for background data = 0.9392, W Quantile = 0.939. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:23 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-2

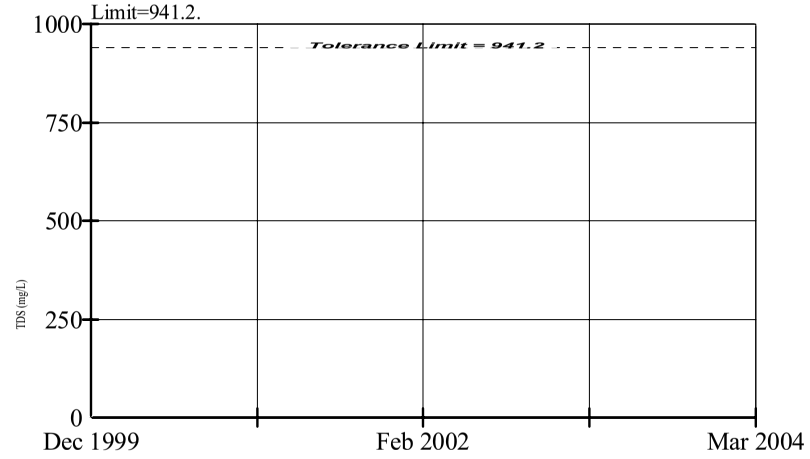


95% coverage. Background Data Summary: (based on square(x) transformed data) Mean=18.17, Std. Dev=7.297, 0% nds, 18 ob test used: Shapiro Wilk. W Statistic for background data = 0.9132, W Quantile = 0.897. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:46 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-2

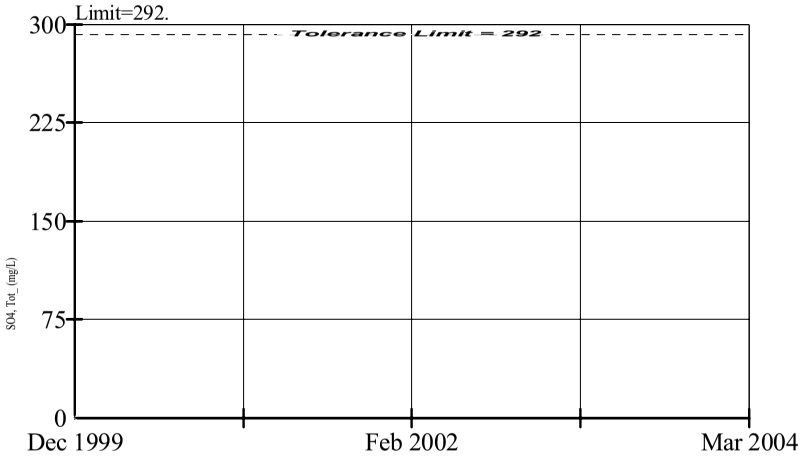


95% coverage. Background Data Summary: Mean=603.1, Std. Dev=146.4, 0% nds, 24 obs. Normality test used: Shapiro Wilk. for background data = 0.929, W Quantile = 0.916. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:48 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

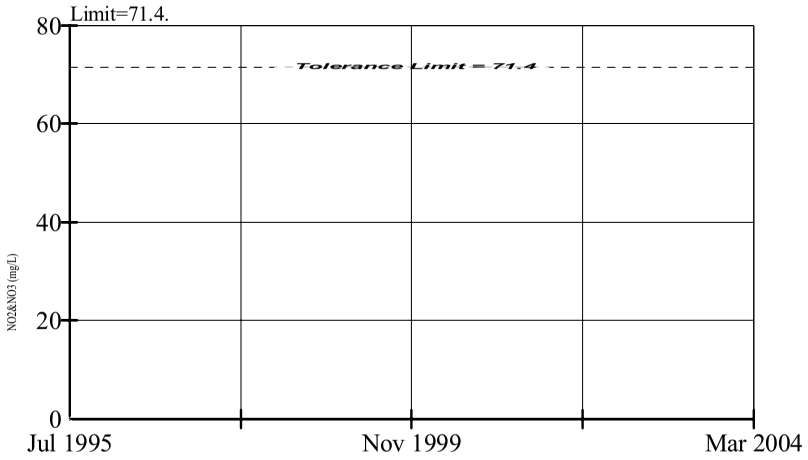
PARAMETRIC INTRA-WELL TOLERANCE LIMIT
K2-2



95% coverage. Background Data Summary: Mean=165.2, Std. Dev=54.93, 0% nds, 24 obs. Normality test used: Shapiro Wilk. for background data = 0.9617, W Quantile = 0.916. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 1:47 PM Client: Regulator View: data

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
KW1-A

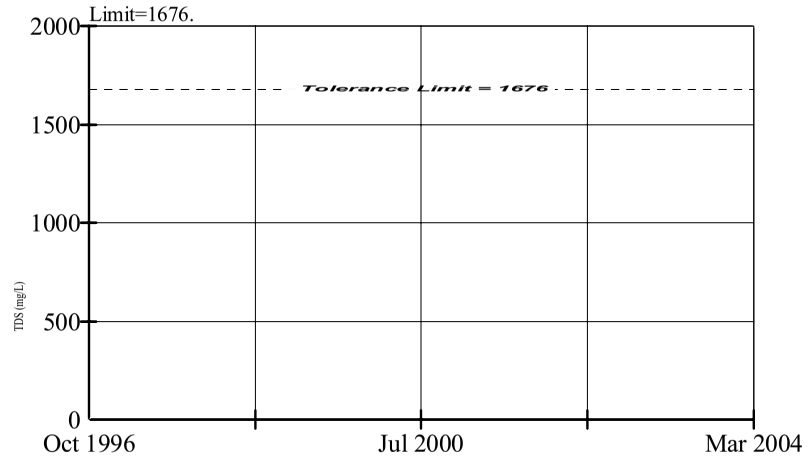


71 background obs. Testwise alpha = 0.01.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:24 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
KW1-A

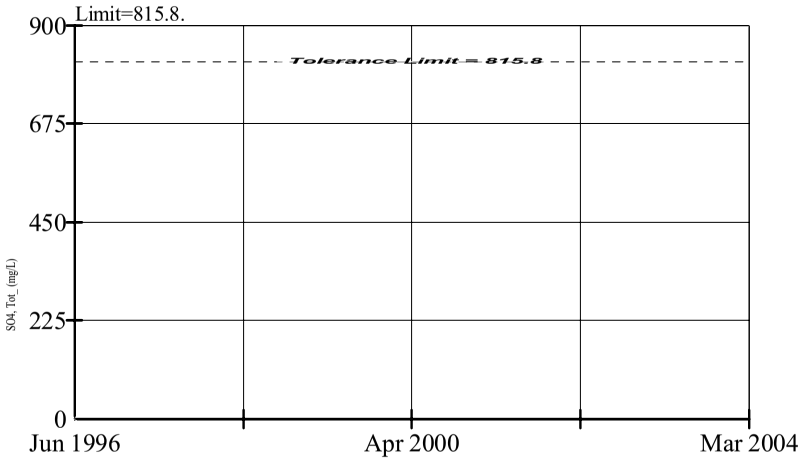


95% coverage. Background Data Summary: Mean=995.1, Std. Dev=335.8, 0% nds, 57 obs. Normality test used: Shapiro-Franci
W Statistic for background data = 0.9619, W Quantile = 0.961. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:26 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
KW1-A



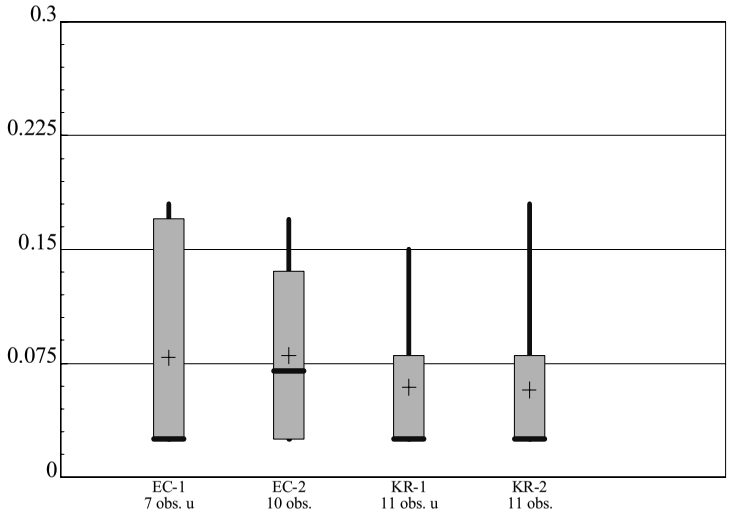
95% coverage. Background Data Summary: Mean=425.9, Std. Dev=192.9, 0% nds, 59 obs. Normality test used: Shapiro-Franci
W Statistic for background data = 0.9665, W Quantile = 0.962. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:25 PM Client: Regulator View: data

K2 MINE, KEY MILL AND KEY PROJECT

SELECTED SURFACE WATER QUALITY MONITORING RESULTS

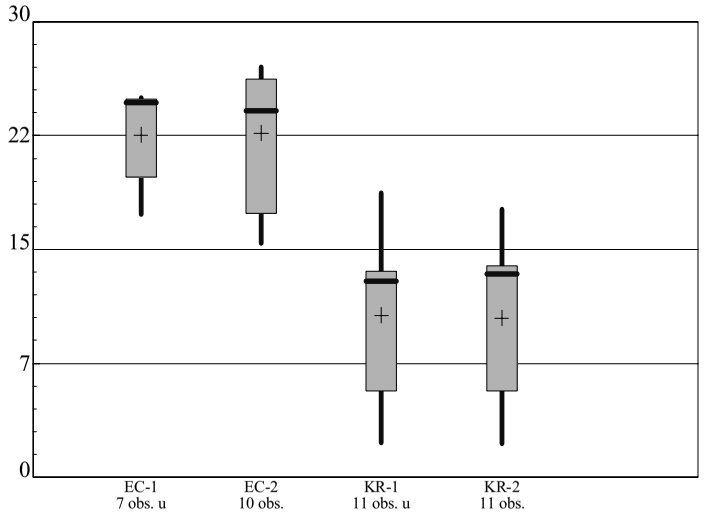
BOX & WHISKERS PLOT



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:44 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

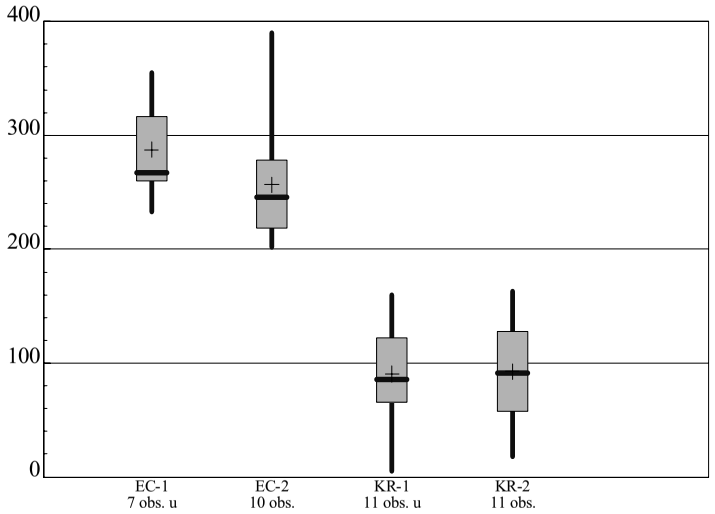
BOX & WHISKERS PLOT



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:45 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

BOX & WHISKERS PLOT



Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:45 PM Client: Regulator View: data

Box & Whiskers Plot

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:46 PM Client: Regulator View: data

Date	NO2&NO3 (mg/L) EC-1*	EC-2	KR-1*	KR-2	SO4 EC-1*	EC-2	KR-1*	KR-2	TDS (mg/L) EC-1*	EC-2
02/02/97			0.15				13.1			
02/03/97				0.18				13.4		
03/17/97				0.08				13.9		
03/18/97		0.12	0.08			25.8	12.9			244
06/10/97	<0.05	<0.05	<0.05	<0.05	24.7	16.2	4.9	3.1	316	202
09/22/97	0.1	<0.05	<0.05	<0.05	25	23.2	7.2	7	267	390
12/04/97	<0.05	0.13	0.05	0.05	17.3	26.5	9.7	10.5	260	249
03/03/98		0.07	0.08	0.09		25.1	13.1	13.6		265
06/22/98	<0.05	<0.05	<0.05	<0.05	19.8	15.4	5.7	5.7	355	234
09/03/98	0.18	0.14	<0.05	<0.05	24.9	27	18.7	17.6	263	290
12/14/98	0.17	0.17	0.14	0.08	24.8	25.9	15.9	14.6	233	239
03/16/99		<0.05	<0.05	<0.05		22.8	13.5	13.5		247
06/21/99	<0.05	0.07	<0.05	<0.05	21.2	18.6	2.3	2.2	316	204

Asterisk indicates background data.

Box & Whiskers Plot (cont.)

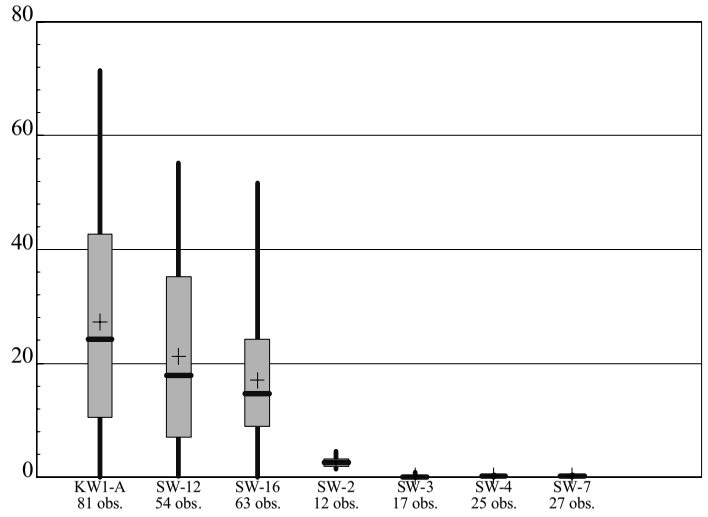
Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:46 PM Client: Regulator View: data

Date	KR-1*	KR-2
02/02/97	86	
02/03/97		105
03/17/97		88
03/18/97	84	
06/10/97	62	40
09/22/97	66	58
12/04/97	76	91
03/03/98	122	127
06/22/98	86	84
09/03/98	160	163
12/14/98	133	129
03/16/99	112	113
06/21/99	<10	18

Asterisk indicates background data.

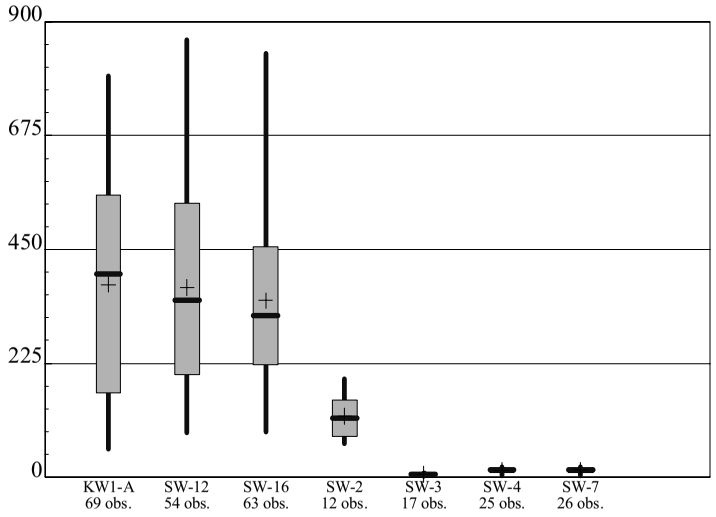
BOX & WHISKERS PLOT



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:48 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

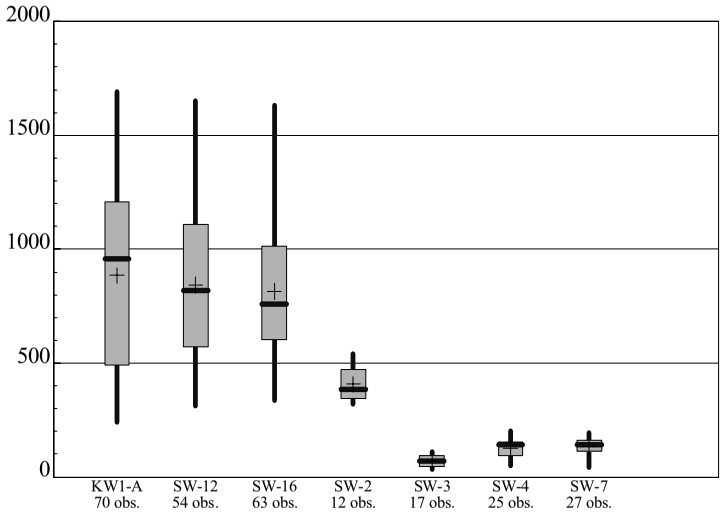
BOX & WHISKERS PLOT



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:48 PM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

BOX & WHISKERS PLOT



Constituent: TDS (mg/L) Facility: Landfill X Data File: KRData1
Date: 5/13/04, 2:49 PM Client: Regulator View: data

Time Series

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 12:57 PM Client: Regulator View: data

Date	NO2&NO3 (mg/L) KW1-A	KW-2	KWP	SO4 KW1-A	KW-2	KWP	TDS (mg/L) KW1-A	KW-2	KWP
01/13/93	1.25			71.7			456		
02/03/93	0.67			55.1			286		
03/02/93	0.98						242		
04/06/93	2.5			62			308		
05/11/93		0.03			41.5			189	
05/12/93	1.27			84.2			294		
06/09/93	0.85			162			438		
07/08/93	2.78			130			419		
08/05/93	2.27			166			504		
09/13/93	10.39			144			444		
09/15/93		1.5			64			300	
10/06/93	13.9	1.26		95	47		432	326	
11/02/93	15.75	0.67		106	62		404	322	
05/10/94	20.3			134			488		
06/08/94	6.7			150			444		
07/12/94	17.6	0.83	8.1	167	60		536	324	
08/09/94	15.12	0.67	8.6	109	47		496	318	
09/07/94	15.8			97			482		
10/04/94	7.2			94			366		
04/10/95	22		2.83	140		100	490		190
05/10/95			6.7			270			400
06/06/95	15.1		11.6			360			570
07/11/95	8.1		4.6			380			690
08/16/95	22		10.1			410			760
09/13/95	29		8.9			426			750
10/17/95	30								
09/04/96	41								
10/02/96	53.7								
11/03/96	53.8								
01/08/97	43.4								
04/23/97	15.3		0.65	195		76.3	554		136
05/13/97	8.18		1.34	189		158	501		295
06/16/97	8.14		2.41	171		280	467		456
07/10/97	10.7		2.7	273		314	655		538
08/11/97	44.2		2.6	379		343	1050		602
09/24/97	59.2		2.36	425		365	1080		576
10/27/97	54.9		1.84	359		374	1030		634
11/20/97	54.4		1.84	336		376	1010		632
12/17/97	46.6			275			863		
04/27/98	13.3		0.53	231		83.5	610		198
05/26/98	8.25		1.27	197		272	612		484
06/25/98	7.34		1.12	158		264	472		460
07/12/98	17.6								
07/23/98	13		1.1	208		281	592		473
08/09/98	15.12								
08/24/98	48.5		1.68	466		315	1110		571
09/09/98	64.9		1.15	556		334	1340		573
10/27/98	65.6		0.92	555		347	1390		642
11/09/98	71.4		0.87	567		362	1320		1000
04/20/99	15.2		0.12	303		24.3	654		51
05/25/99	7.82		0.59	200		294	540		527
06/29/99	17.6		0.6	332		318	717		500
07/27/99	42.2		0.55	523		334	1130		532
08/31/99	47		0.48	560		323	1390		545
10/26/99	54.1			558			1230		
11/23/99	47.4			428			1030		
12/09/99	44.7			392			938		
04/28/00	27.2			402			980		
05/24/00	14.3			459			930		
06/20/00	29.3			538			1170		
07/24/00	40.4			618			1350		
08/22/00	47.4			642			1310		
09/11/00	44.7			593			919		
10/25/00	44.2			478			1020		
02/07/01			0.08			392			438
04/30/01	41.5			484			1220		
05/31/01	41.8			617			1020		
06/13/01	43.1			706			1250		
09/25/01			0.03			400			617
10/29/01	0.08		0.02	470		370	1120		620
11/27/01	0.06			440			1050		
05/06/02	24.3			481			983		

Time Series (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 12:57 PM Client: Regulator View: data

	NO2&NO3 (mg/L)			SO4			TDS (mg/L)		
Date	KW1-A	KW-2	KWP	KW1-A	KW-2	KWP	KW1-A	KW-2	KWP
06/25/02	12.8			384			851		
09/09/02	38.9		<0.05	718		382	1470		614
10/31/02	39.4		<0.05	640		384	1360		634
11/21/02	39.2		<0.05	537		375	1170		628
12/18/02	39.7			647			1180		
04/23/03	13.5		0.117	494		178	994		290
05/29/03	9.39		<0.05	408		338	836		553
06/23/03	25.4		<0.05	637		349	1290		579
07/29/03	38.2		<0.05	793		360	1690		651
08/27/03	39.8		<0.05	744		369	1600		645
09/23/03	41.3		<0.05	763		378	1560		635
10/30/03	37.9		<0.05	584		382	1270		674
11/24/03	38.3			583			1280		
12/11/03	36			543			1190		

Box & Whiskers Plot (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:50 PM Client: Regulator View: data

					TDS (mg/L)					
Date	SW-2	SW-3	SW-4	SW-7	KW1-A	SW-12	SW-16	SW-2	SW-3	SW-4
01/13/93					456					
02/03/93					286					
03/02/93					242					
04/06/93					308		338			
05/12/93					294	313	373			
06/09/93					438	375	368			
07/08/93					419	380	377			
08/05/93					504	432	416			
09/13/93					444	426	436			
10/06/93					432	428	424			
11/02/93					404		474			
05/10/94					488	398	436			
06/08/94					444	426	416			
07/12/94					536	434	428			
08/09/94					496		498			
09/07/94					482					
10/04/94					366					
04/10/95					490	480	610			
06/06/95										
07/11/95										
08/16/95										
09/13/95										
10/17/95										
09/04/96										
10/02/96										
11/03/96										
01/08/97										
03/17/97			17.4	16.6						145
04/23/97					554	667	1180			
05/13/97					501	581	966			
06/11/97	141	3.8	7.2	7.1				413	36	72
06/16/97					467	520	703			
07/10/97					655	533	660			
08/11/97					1050	561.5 D	754			
09/22/97	72.4	6.6	14.4	14.1				332	69	122
09/24/97					1080	620	884			
10/27/97					1030	639	947			
11/20/97					1010	640	905			
12/03/97	68.9	6	17.5	17.5				324	82	146
12/17/97					863	613	1020			
03/03/98			17.2	18.1						163
04/27/98					610	1250	657 D			
05/26/98					612	1350	615			
06/23/98	129	6.2	16.7	16.5				446	92	141
06/25/98					472	1390	608			
07/12/98										
07/23/98					592	838	642			
08/09/98										
08/24/98					1110	1010	717			
09/09/98	66.7	7.8	19	18.8	1340	1040	776	361	110	200
10/27/98					1390	1200	769			
11/09/98					1320	1210	702			
12/16/98	104	6	16.9	16.6				369	103	151
03/16/99	102	5.2	17.1	17				360	90	152
04/20/99					654	1310	684			
05/25/99					540	1140	638			
06/29/99	133	2.5	4.6	4.7	717	679	587	400	42	53
07/27/99					1130	736 D	603 D			
08/31/99					1390	916	603			
10/26/99					1230	1100				
11/22/99							712			
11/23/99					1030	1220				
12/08/99	91.1	6.3	16	15.4				321	101	140
12/09/99					938	1110				
03/20/00			17.5	17						158
04/28/00					980	1650	940			
05/24/00					930	780	1270			
06/20/00	161	2.6			1170	827	757	509	33	
06/28/00			5.5	5.4						75
07/24/00					1350	896	705			
08/22/00					1310	1060				
09/11/00		6.1	12.4	13.2	919	807	575		73	136

D = Average of Duplicate or Split observations.

Box & Whiskers Plot (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:51 PM Client: Regulator View: data

TDS (mg/L)

Date	SW-2	SW-3	SW-4	SW-7	KW1-A	SW-12	SW-16	SW-2	SW-3	SW-4
10/25/00					1020	992	588			
01/03/01			14.3	14.7						151
03/19/01			16.3	16.7						161
04/30/01					1220	1090	1010			
05/31/01					1020	1030	1030			
06/13/01		3.2	5.2	5.8	1250	948	902		72	67
07/18/01						1140	900			
10/29/01					1120	1330	850			
11/27/01					1050	1340	834			
12/04/01		<10	20	20					70	140
03/12/02										
05/06/02					983	856	945			
06/25/02		2.3	3.9	3.9	851	723	820		40	49
09/09/02		3.5	11.9	13.7	1470		1120		49	110
10/31/02					1360		1300			
11/20/02		4.51	11.1	12.1					62	111
11/21/02					1170		1290			
12/18/02					1180		1230			
03/24/03		4.38		15.7					71	
03/31/03	193							540		
04/23/03					994	883	1630			
05/29/03					836	757	805			
06/23/03	175				1290	602	852	494		
06/24/03			5.46	4.88						51
07/29/03					1690	745	1130			
08/27/03					1600		1270			
09/23/03			12	13	1560		1320			142
10/30/03					1270		1420			
11/24/03					1280		1400			
12/10/03			12.6	13.8						115
12/11/03					1190		1400			
03/30/04			11.9	13						112

D = Average of Duplicate or Split observations.

Box & Whiskers Plot (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:52 PM Client: Regulator View: data

Date	SW-7
10/25/00	
01/03/01	160
03/19/01	167
04/30/01	
05/31/01	
06/13/01	81
07/18/01	
10/29/01	
11/27/01	
12/04/01	160
03/12/02	170
05/06/02	
06/25/02	48
09/09/02	195
10/31/02	
11/20/02	124
11/21/02	
12/18/02	
03/24/03	130
03/31/03	
04/23/03	
05/29/03	
06/23/03	
06/24/03	41
07/29/03	
08/27/03	
09/23/03	164
10/30/03	
11/24/03	
12/10/03	115
12/11/03	
03/30/04	137

D = Average of Duplicate or Split observations.

Box & Whiskers Plot (cont.)

Constituent: Multiple Facility: Landfill X Data File: KRData1

Date: 5/13/04, 2:51 PM Client: Regulator View: data

Date	SW-7
01/13/93	
02/03/93	
03/02/93	
04/06/93	
05/12/93	
06/09/93	
07/08/93	
08/05/93	
09/13/93	
10/06/93	
11/02/93	
05/10/94	
06/08/94	
07/12/94	
08/09/94	
09/07/94	
10/04/94	
04/10/95	
06/06/95	
07/11/95	
08/16/95	
09/13/95	
10/17/95	
09/04/96	
10/02/96	
11/03/96	
01/08/97	
03/17/97	142
04/23/97	
05/13/97	
06/11/97	57
06/16/97	
07/10/97	
08/11/97	
09/22/97	126
09/24/97	
10/27/97	
11/20/97	
12/03/97	144
12/17/97	
03/03/98	169
04/27/98	
05/26/98	
06/23/98	144
06/25/98	
07/12/98	
07/23/98	
08/09/98	
08/24/98	
09/09/98	190
10/27/98	
11/09/98	
12/16/98	138
03/16/99	151
04/20/99	
05/25/99	
06/29/99	69
07/27/99	
08/31/99	
10/26/99	
11/22/99	
11/23/99	
12/08/99	157
12/09/99	
03/20/00	135
04/28/00	
05/24/00	
06/20/00	
06/28/00	78
07/24/00	
08/22/00	
09/11/00	148

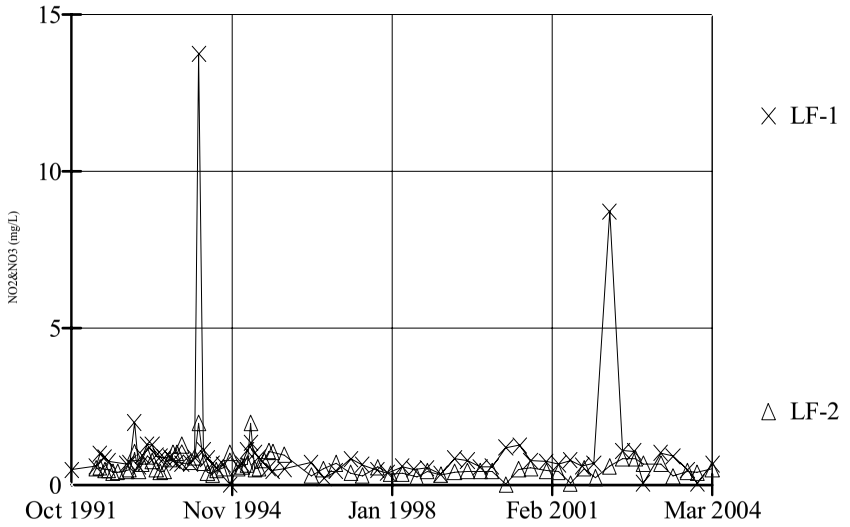
D = Average of Duplicate or Split observations.

LAMEFOOT MINE

SELECTED GROUND WATER QUALITY MONITORING RESULTS

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

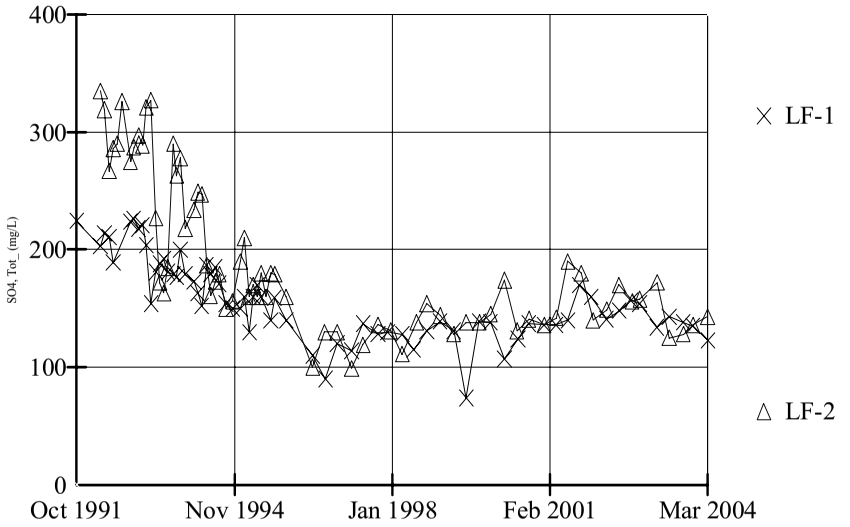
TIME SERIES



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:15 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

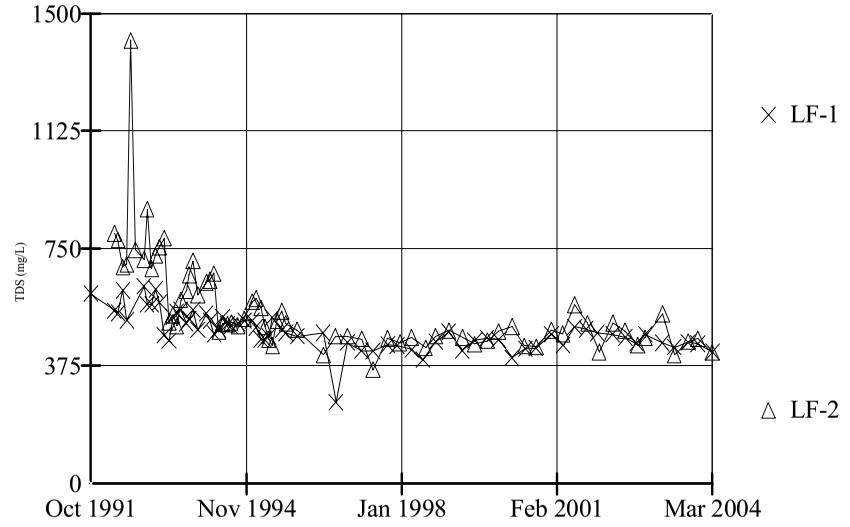
TIME SERIES



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:16 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:17 AM Client: Regulator View: data

Time Series

Constituent: Multiple Facility: Landfill X Data File: LFOOT3

Date: 5/17/04, 10:18 AM Client: Regulator View: data

	NO2&NO3 (mg/L)		SO4		TDS (mg/L)	
Date	LF-1	LF-2	LF-1	LF-2	LF-1	LF-2
10/18/91	0.47		224.6		606	
04/07/92	0.59	0.52	203	335	552	799
05/05/92	0.99	0.55	214	319	544	776
06/09/92	0.87	0.47	211	267	616	691
07/08/92	0.74	0.48	189	286	521	699
08/05/92		0.4		290		1414
09/08/92		0.41		326		746
11/10/92	0.66	0.44	224	275	629	715
12/02/92	0.69	0.49	226	287	572	875
01/05/93	1.99	1.03	218	297	571	686
02/03/93	0.58	0.43	221	289	619	728
03/02/93	0.93	0.68	204	321	578	754
04/06/93	1.28	0.92	154	327	474	782
05/11/93	1.27	0.76	181	227	455	513
06/08/93	0.93	0.5	188	172	531	538
07/07/93	0.89	0.42	192	163	547	503
08/05/93	0.86	0.43	181	185	553	586
09/14/93	0.88	0.81	179	290	510	616
10/06/93	0.77	1.01	177	263	526	666
11/02/93	0.7	1.01	200	278	554	710
12/07/93	0.68	1.26	179	218	490	602
02/08/94	0.69	0.73	173	234	542	642
03/08/94	0.88	0.87	163	249	520	648
04/06/94	13.74 D	1.97	152	247	478	670
05/10/94	1.11	0.7	187	187	492	484
06/07/94	0.83	0.39	179	161	532	510
07/12/94	0.67	0.34	185	173	508	508
08/09/94	0.54	0.46	171	179	504	514
09/27/94	0.65	0.54	154	150 D	510	503 D
11/14/94	<0.02	1.01	150	156	520	526
01/09/95	0.58	0.53	150	190	520	580
02/06/95	0.67	0.6	160	210	498	590
03/14/95	1.09	0.66	130	160	460	560
04/11/95	1.33	1.97	160	170	460	500
05/09/95		0.51		160		460
05/10/95	1.01		170		470	
06/05/95	0.87		160		530	
06/06/95		0.54		180		440
07/11/95		0.79		160		520
08/15/95	0.52	1.07	140	180	490	550
09/11/95	0.44		159		480	
09/13/95		1.04		179		510
12/05/95	0.51	0.96	140	160	470	490
06/11/96	0.7		110		480	
06/12/96		0.29		100		410
09/05/96		0.5		130		470
09/11/96	0.21		90		260	
12/04/96	0.43	0.69	120	130	450	470
03/18/97	0.82		114		424	
03/19/97		0.38		99.1		461
06/09/97	0.64	0.29	137	119	423	363
09/24/97	0.46	0.56	128	136	443	463
12/02/97	0.38		130		440	
12/23/97		0.35		131		449
03/18/98	0.58	0.36	128	111	427	466
06/08/98	0.49		115		395	
06/29/98		0.25		138		433
09/10/98	0.53	0.43	131	154	452	470
12/15/98	0.34	0.32	139	144	483	488
03/23/99	0.83	0.41	131	128	425	466
06/22/99	0.77	0.43	73.9	138	456	445
09/22/99	0.56		139		464	
09/23/99		0.43		138		455
12/13/99	0.58	0.43	138	145	459	485
03/21/00	1.19		107		401	
03/23/00		<0.02		174		501
06/20/00		0.49		131		439
06/27/00	1.25		124		430	
09/12/00	0.76		137		432	
09/14/00		0.54		141		436
01/02/01	0.73	0.44	136	136	477	489
03/28/01		0.42		142		478

D = Average of Duplicate or Split observations.

Time Series (cont.)

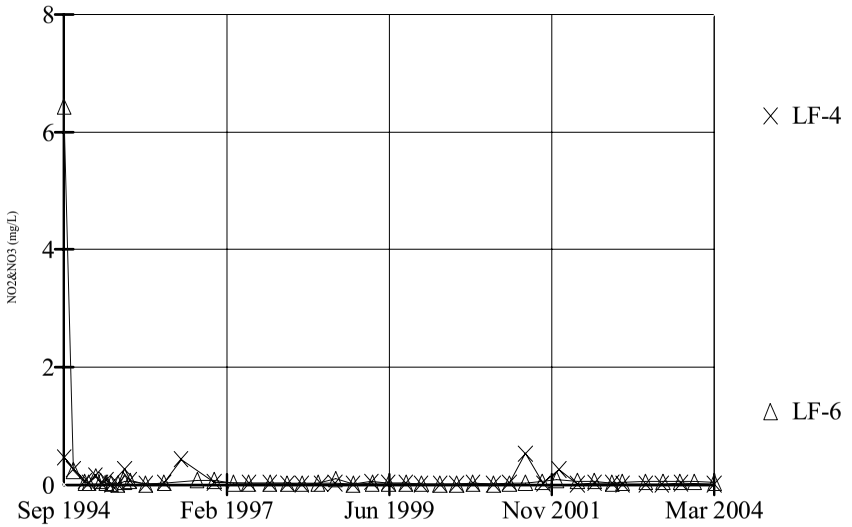
Constituent: Multiple Facility: Landfill X Data File: LFOOT3

Date: 5/17/04, 10:18 AM Client: Regulator View: data

	NO2&NO3 (mg/L)		SO4		TDS (mg/L)	
Date	LF-1	LF-2	LF-1	LF-2	LF-1	LF-2
03/29/01	0.66		136		441	
06/21/01	0.78	0.04	140	190	500	570
09/12/01	0.6		170		492	
09/25/01		0.52		180		511
12/05/01	0.68		160		480	
12/18/01		0.22		140		420
03/26/02	8.72	0.59	141	149	476	512
06/25/02		0.84		170		487
06/27/02	1.08		148		466	
09/16/02	1.06		157		447	
09/26/02		0.84		156		441
11/19/02	0.05		154		476	
11/20/02		0.67		158		465
03/24/03	1.01		134		449	
03/25/03		0.67		172		541
06/19/03	0.91	0.27	143	125	435	410
09/29/03	0.473	0.427	138	128	451	452
12/08/03	0.047	0.39	135	136	446	462
03/23/04		0.5		143		418
03/24/04	0.66		123		420	

D = Average of Duplicate or Split observations.

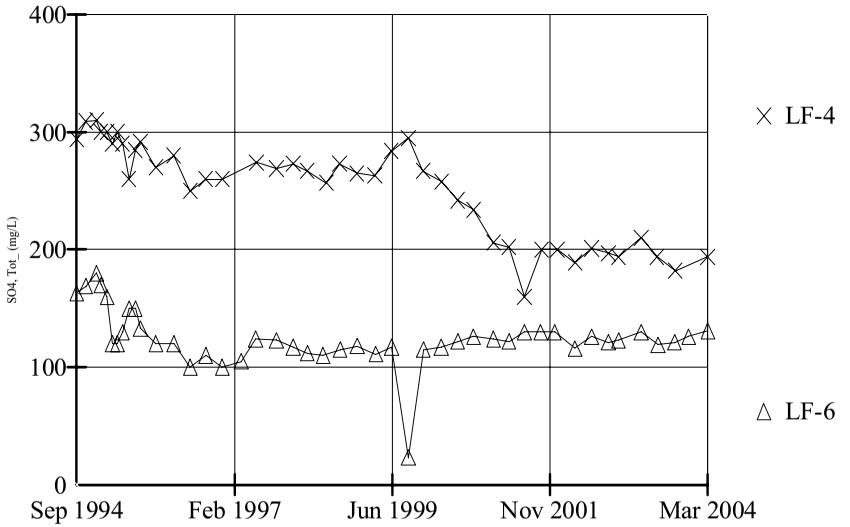
TIME SERIES



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:21 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

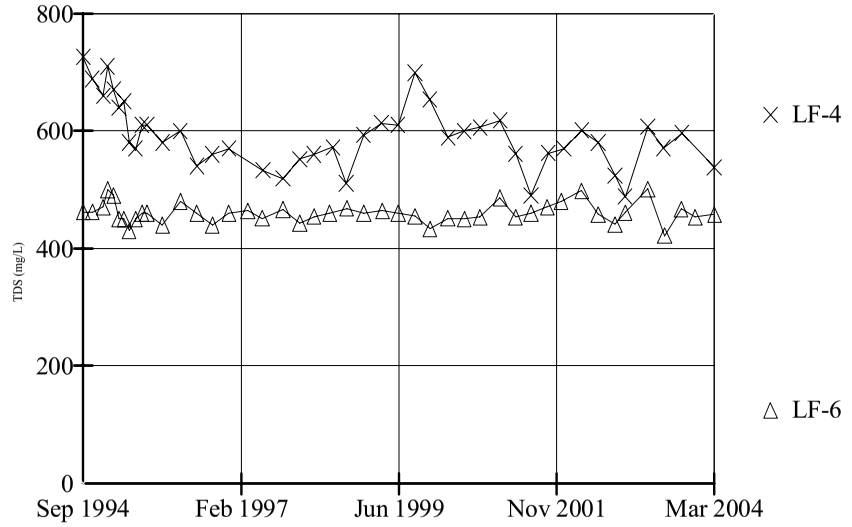
TIME SERIES



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:22 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:23 AM Client: Regulator View: data

Time Series

Constituent: Multiple Facility: Landfill X Data File: LFOOT3

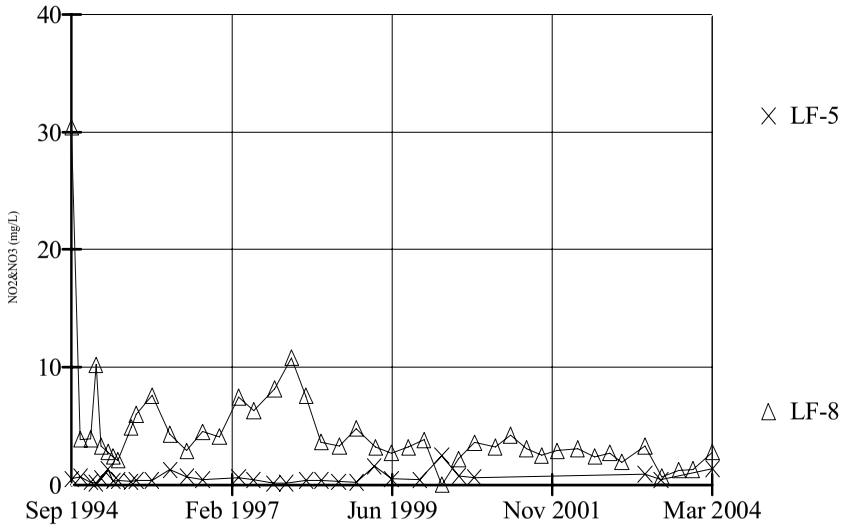
Date: 5/17/04, 10:23 AM Client: Regulator View: data

	NO2&NO3 (mg/L)		SO4		TDS (mg/L)	
Date	LF-4	LF-6	LF-4	LF-6	LF-4	LF-6
09/27/94	0.47		294		726	
09/28/94		6.44		163		462
11/16/94	0.27	0.24	309	169	688	462
01/16/95	0.06	0.04	310	180	660	470
02/07/95	0.03	0.03	300	170	710	500
03/14/95	0.16	0.14	300	160	670	490
04/11/95	0.03	0.06	290	120	640	450
05/10/95	0.08	0.03	300	120	650	450
06/06/95	<0.02	0.02	290	130	580	430
07/11/95	<0.02	<0.02	260	150	570	450
08/16/95	0.27	0.05	285	150	610	460
09/13/95	0.07	0.06	292	133	610	460
12/06/95	<0.02	<0.02	270	120	580	440
03/14/96	0.03	0.03	280	120	600	480
06/12/96	0.43		250	100	540	460
09/05/96		0.08	260	110	560	440
12/05/96	0.04	0.07	260	100	570	460
03/19/97		<0.05		105		464
06/06/97		<0.05		124		451
06/10/97	<0.05		274		533	
09/29/97	<0.05	<0.05	269	123	519	466
12/30/97	0.02	0.02	273	117	552	443
03/18/98	<0.02	0.02	267	112	560	454
06/11/98		<0.05		110		460
06/29/98	0.02		257		572	
09/10/98	<0.05		273		511	
09/14/98		0.1		115		468
12/15/98	<0.02		265		593	
12/16/98		<0.02		118		460
03/23/99	0.05		263		613	
03/29/99		<0.05		111		464
06/22/99	0.03		284		610	
06/23/99		0.02		117		460
09/23/99	<0.05	<0.05	295	23.1	699	455
12/13/99	<0.02		267		654	
12/15/99		0.015 D		115 D		433 D
03/22/00		<0.02		117		451
03/23/00	<0.02		258		589	
06/20/00	<0.02	<0.02	242	122	600	450
09/14/00	<0.05	<0.05	234	126	606	453
01/02/01	<0.02		206		618	
01/03/01		<0.02		124		486
03/28/01	0.03	0.02	202	122	561	453
06/21/01	0.53	0.03	160	130	490	460
09/19/01		0.05		130		470
09/25/01	0.02		200		562	
12/04/01		0.09		130		480
12/18/01	0.26		200		570	
03/26/02	<0.02	0.06	189	116	601	498
06/25/02	0.03	0.06	201	126	580	458
09/26/02	<0.05	<0.05	197	121	524	441
11/20/02	<0.02	0.04	194	123	488	461
03/25/03	<0.02	0.05	210	130	607	501
06/19/03	<0.02		194		571	
06/25/03		0.05		119		422
09/24/03		0.054		121		467
09/29/03	<0.05		182		596	
12/10/03		0.05		126		453
03/23/04	<0.02		194		538	
03/25/04		0.04		131		458

D = Average of Duplicate or Split observations.

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

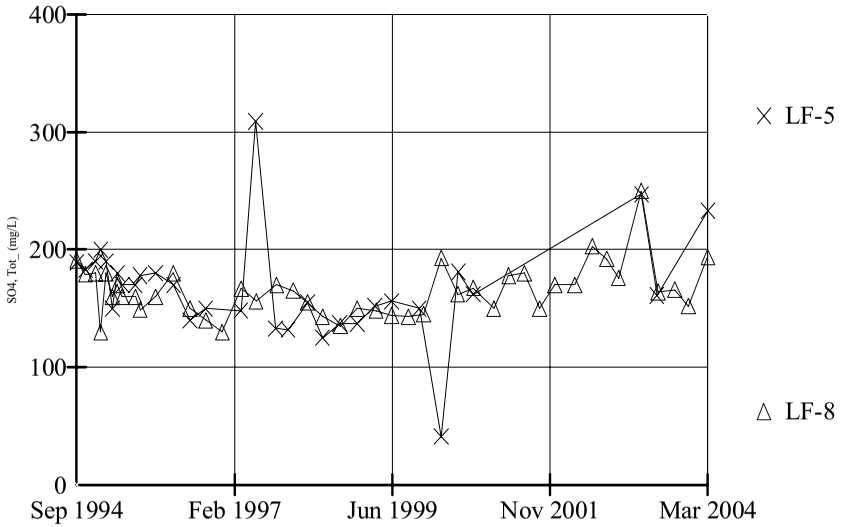
TIME SERIES



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:25 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

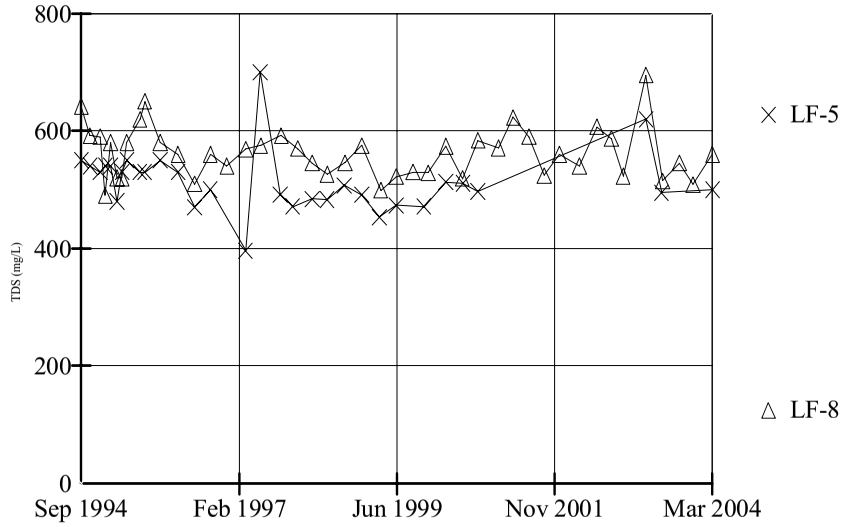
TIME SERIES



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:25 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:27 AM Client: Regulator View: data

Time Series

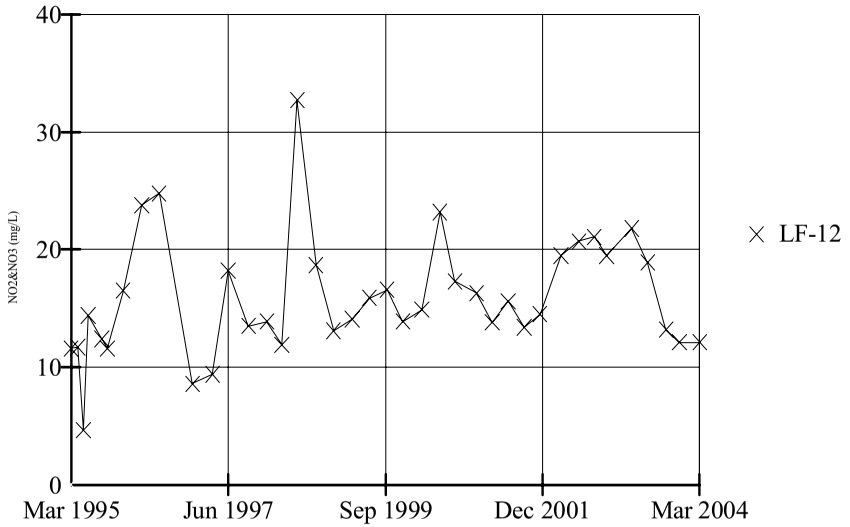
Constituent: Multiple Facility: Landfill X Data File: LFOOT3

Date: 5/17/04, 10:28 AM Client: Regulator View: data

	NO2&NO3 (mg/L)		SO4		TDS (mg/L)	
Date	LF-5	LF-8	LF-5	LF-8	LF-5	LF-8
09/27/94	0.49		189		550	
09/28/94		30.4		191		642
11/14/94	0.68	3.85	183	179	540	592
01/09/95	0.23	3.9	190	180	530	590
02/06/95	0.14	10.2	200	130	540	490
03/07/95	0.52	3.3	190	180	540	580
04/11/95	1.32	2.79	150	160	480	520
05/10/95	0.32	2.39	180	170	530	520
06/05/95	0.37	2.08	170	160	550	580
08/15/95	0.27	4.9	170	160	530	620
09/11/95	0.35	6	178	149	530	650
12/05/95	0.37	7.6	180	160	550	580
03/12/96	1.26	4.29	170	180	530	560
06/11/96	0.69	2.88	140	150	470	510
09/05/96	0.43	4.5	150	140	500	560
12/05/96		4.1		130		540
03/18/97	0.61		148		396	
03/19/97		7.47		167		569
06/06/97	0.42		309		700	
06/09/97		6.29		156		575
09/23/97	0.11		133		492	
09/29/97		8.16		170		592
12/02/97	0.14		132		471	
12/30/97		10.8		165		570
03/18/98	0.35	7.55	155	155	484	545
06/08/98	0.36	3.64	125	143	483	526
09/10/98	0.27		137		507	
09/14/98		3.29		135		546
12/15/98	0.2		137		491	
12/16/98		4.79		150		575
03/23/99	1.58		152		453	
03/29/99		3.2		148		499
06/22/99	0.49		156		473	
06/23/99		2.7		144		522
09/23/99		3.2		143		530
11/22/99	0.42		150		471	
12/15/99		3.8		145		529
03/21/00	2.48		41		513	
03/22/00		<0.02		193		574
06/20/00		2.19		162		519
06/22/00	0.75		181		511	
09/13/00	0.61		162		497	
09/14/00		3.58 D		167.5 D		584 D
01/03/01		3.22		150		571
03/27/01		4.23		178		623
06/21/01		3.06		180		590
09/12/01		2.49		150		524
12/05/01		2.88		170		560
03/25/02		3.07		170		540
06/27/02		2.4		203		607
09/16/02		2.7		192		587
11/19/02		1.92		176		523
03/25/03	0.91	3.29	247	250	620	695
06/19/03	0.42		161		495	
06/24/03		0.7		164		515
09/24/03		1.23		166		545
12/08/03		1.3		152		509
03/24/04	1.37	2.79	233	194	500	560

D = Average of Duplicate or Split observations.

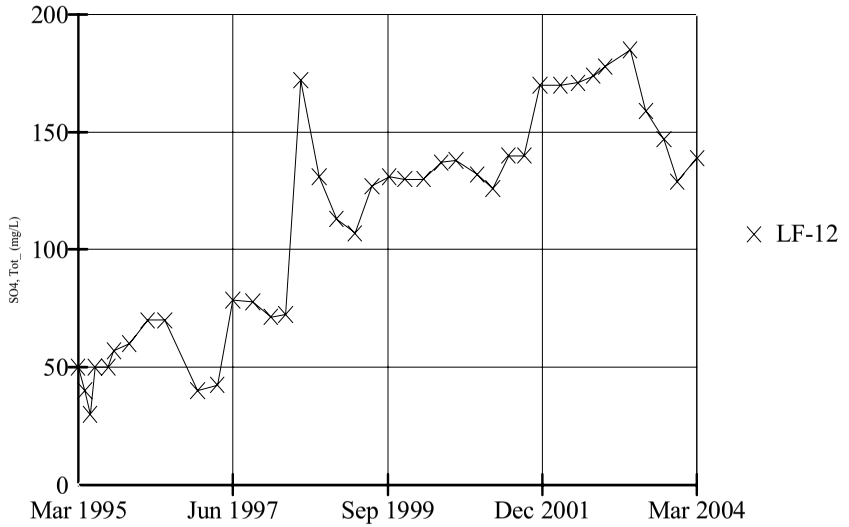
TIME SERIES



Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:31 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

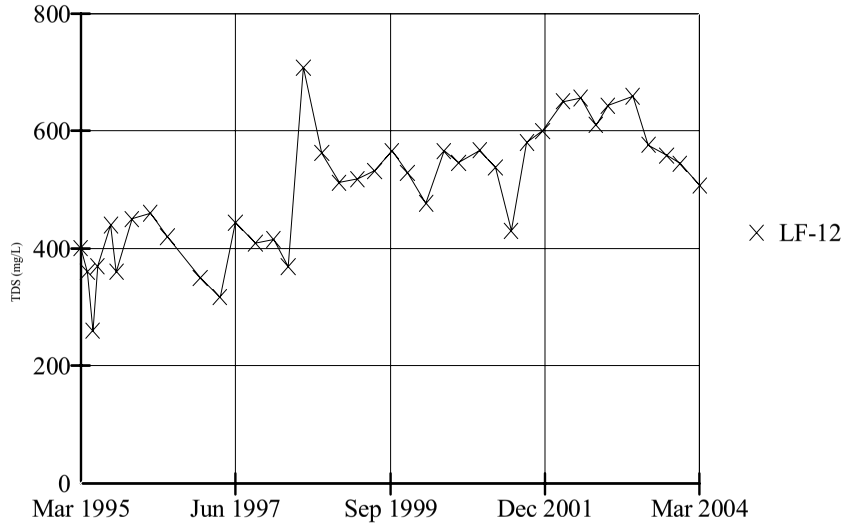
TIME SERIES



Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:32 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

TIME SERIES



Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:32 AM Client: Regulator View: data

Time Series

Constituent: Multiple Facility: Landfill X Data File: LFOOT3

Date: 5/17/04, 10:33 AM Client: Regulator View: data

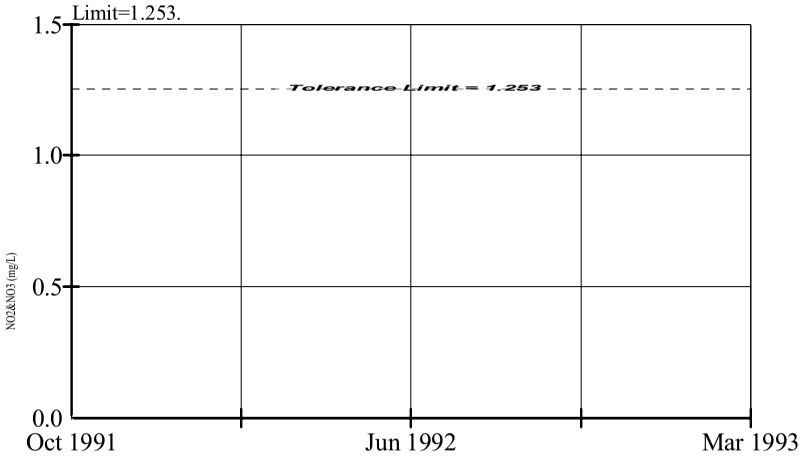
Date	NO2&NO3 (mg LF-12	SO4 LF-12	TDS (mg/L) LF-12
03/07/95	11.6	50	400
04/11/95	11.7	40	360
05/10/95	4.66	30	260
06/05/95	14.4	50	370
08/15/95	12.4	50	440
09/13/95	11.6	57	360
12/05/95	16.5	60	450
03/12/96	23.8	70	460
06/11/96	24.8	70	420
12/04/96	8.6	40	350
03/19/97	9.39	42.5	317
06/09/97	18.2	78.6	444
09/24/97	13.5	77.8	409
12/30/97	13.9	71.4	415
03/18/98	11.9	72.4	369
06/08/98	32.7	172	708
09/14/98	18.7	131	562
12/15/98	13.1	113	512
03/23/99	14.1	107	518
06/22/99	15.9	127	532
09/23/99	16.6	131	566
12/15/99	13.9	130	529
03/23/00	14.9	130	477
06/27/00	23.2	137	566
09/13/00	17.3	138	546
01/04/01	16.3	132	567
03/29/01	13.8	126	538
06/21/01	15.6	140	430
09/12/01	13.4	140	580
12/05/01	14.5	170	600
03/25/02	19.5	170	650
06/27/02	20.7	171	656
09/16/02	21.1	174	610
11/20/02	19.5	178	643
03/31/03	21.8	185	659
06/24/03	18.9	159	576
09/29/03	13.2	147	558
12/08/03	12.1	129	544
03/23/04	12.1	139	507

LAMEFOOT MINE

GROUND WATER ENFORCEMENT LIMITS

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-1

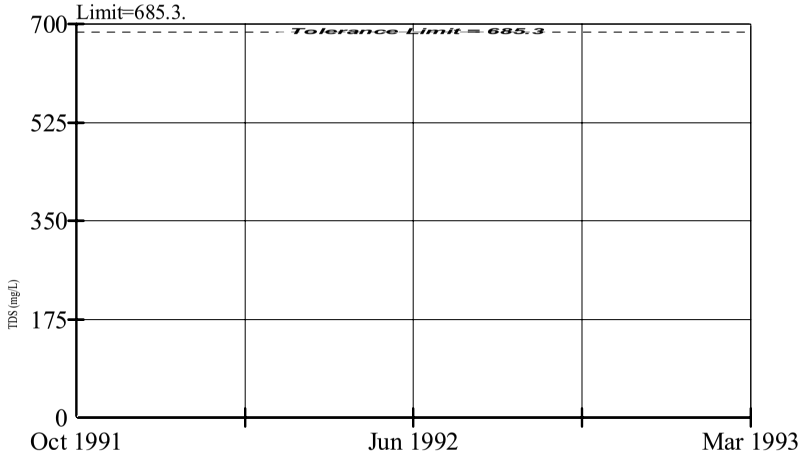


95% coverage. Background Data Summary: Mean=0.7244, Std. Dev=0.1744, 0% nds, 9 obs. Normality test used: Shapiro Wilk. Statistic for background data = 0.9577, W Quantile = 0.829. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:40 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-1

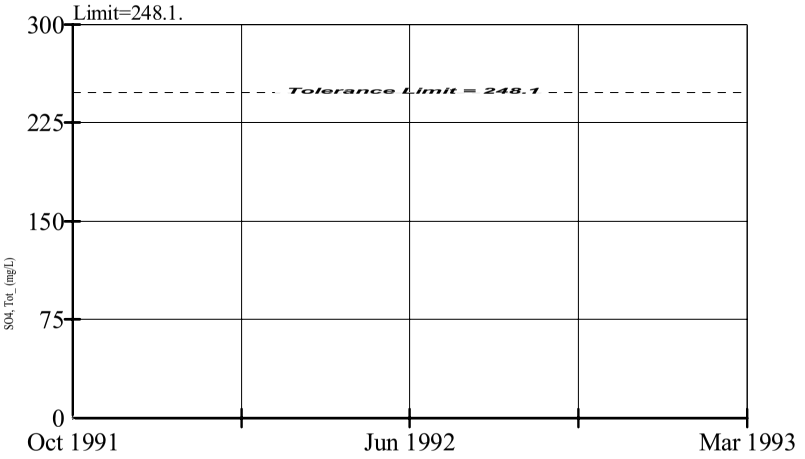


95% coverage. Background Data Summary: Mean=580.8, Std. Dev=35.9, 0% nds, 10 obs. Normality test used: Shapiro Wilk. for background data = 0.9486, W Quantile = 0.842. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:41 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-1

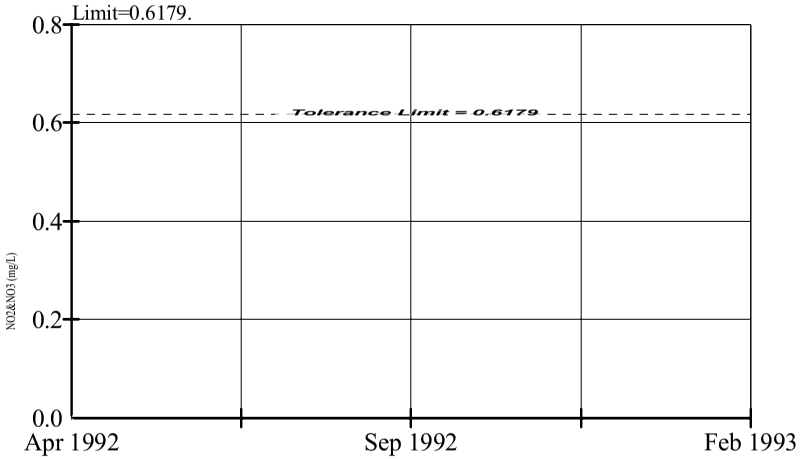


95% coverage. Background Data Summary: Mean=213.5, Std. Dev=11.9, 0% nds, 10 obs. Normality test used: Shapiro Wilk. for background data = 0.9082, W Quantile = 0.842. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:40 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-2

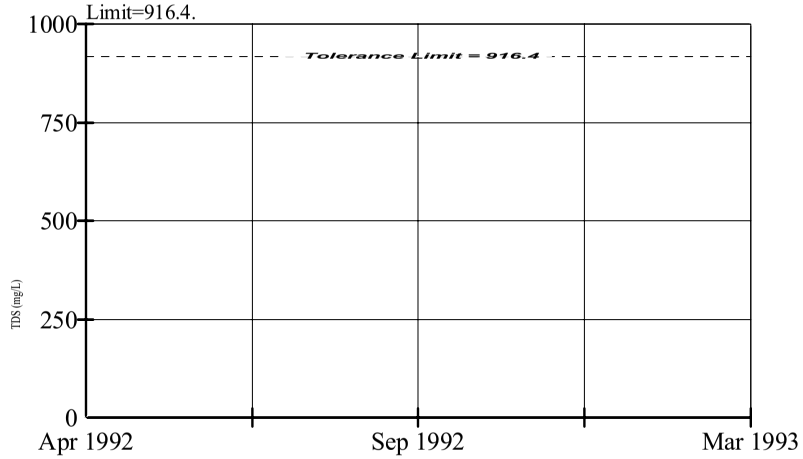


95% coverage. Background Data Summary: Mean=0.4656, Std. Dev=0.05028, 0% nds, 9 obs. Normality test used: Shapiro Wil
Statistic for background data = 0.9644, W Quantile = 0.829. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:43 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-2

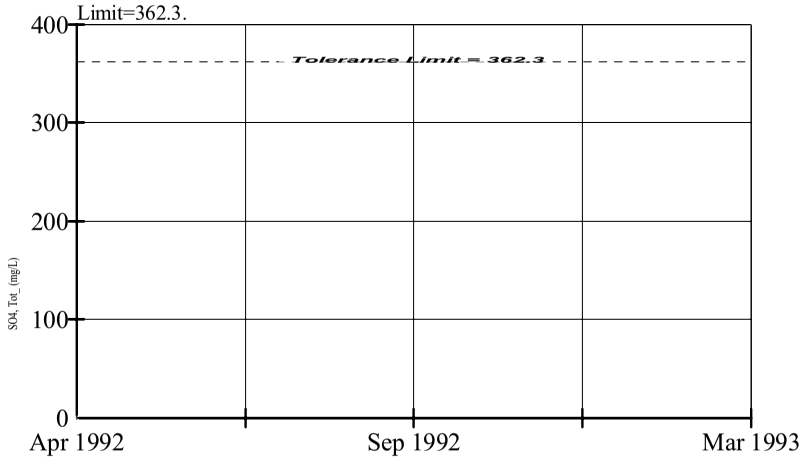


95% coverage. Background Data Summary: Mean=746.9, Std. Dev=58.24, 0% nds, 10 obs. Normality test used: Shapiro Wilk.
for background data = 0.9026, W Quantile = 0.842. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:44 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-2

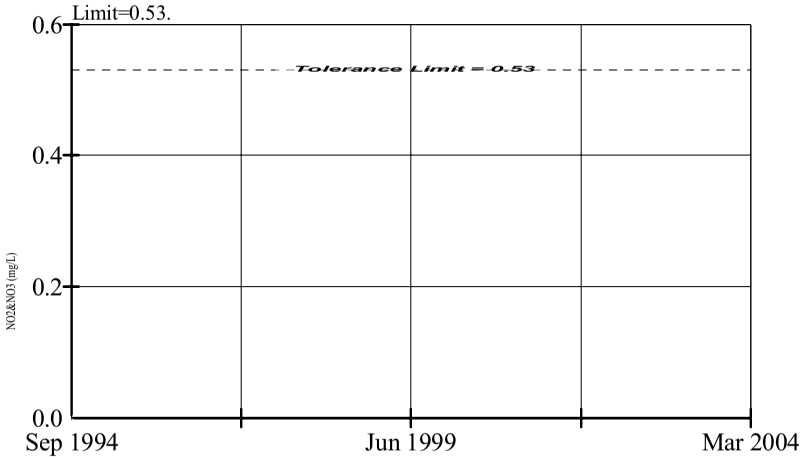


95% coverage. Background Data Summary: Mean=299.3, Std. Dev=22.37, 0% nds, 11 obs. Normality test used: Shapiro Wilk.
for background data = 0.9245, W Quantile = 0.85. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 10:44 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-4

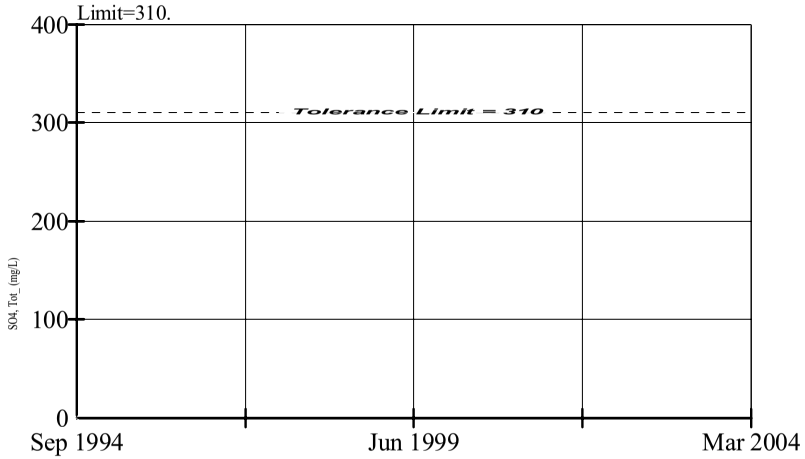


Testwise alpha = 0.116.
42 background observations. 89.65% coverage at alpha=0.01; 93.16% at alpha=0.05; 98.24% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:29 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-4

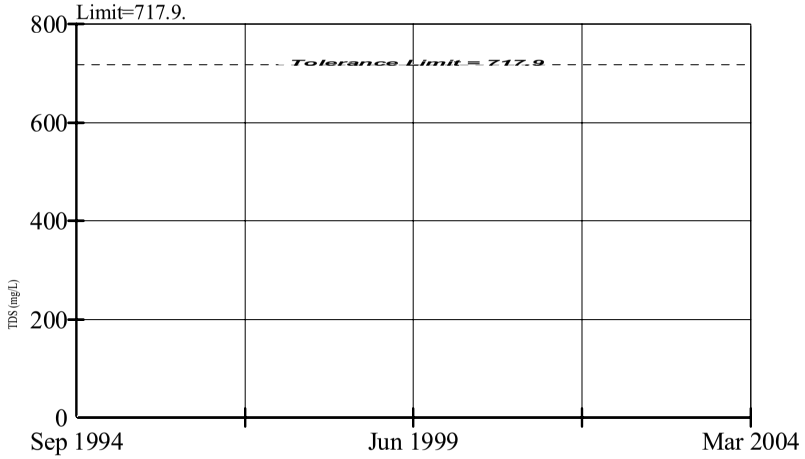


Testwise alpha = 0.1102.
43 background observations. 90.04% coverage at alpha=0.01; 93.16% at alpha=0.05; 98.24% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:31 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-4

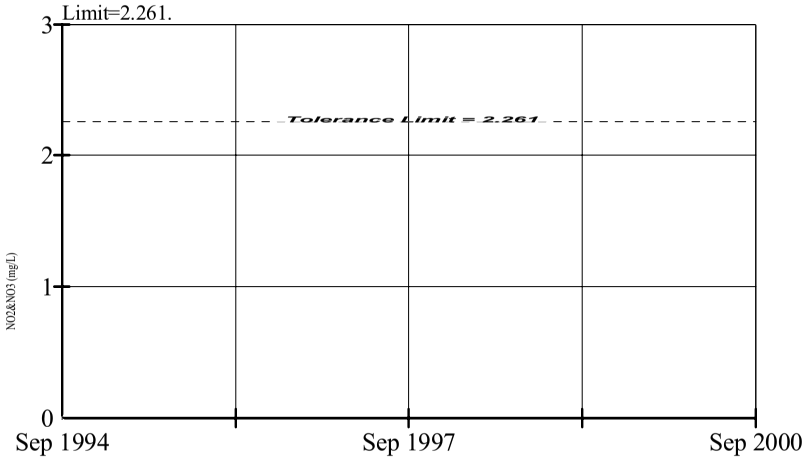


95% coverage. Background Data Summary: (based on ln(x) transformed data) Mean=6.38, Std. Dev=0.09311, 0% nds, 43 obs. 1
test used: Shapiro Wilk. W Statistic for background data = 0.9745, W Quantile = 0.943. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:32 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-5

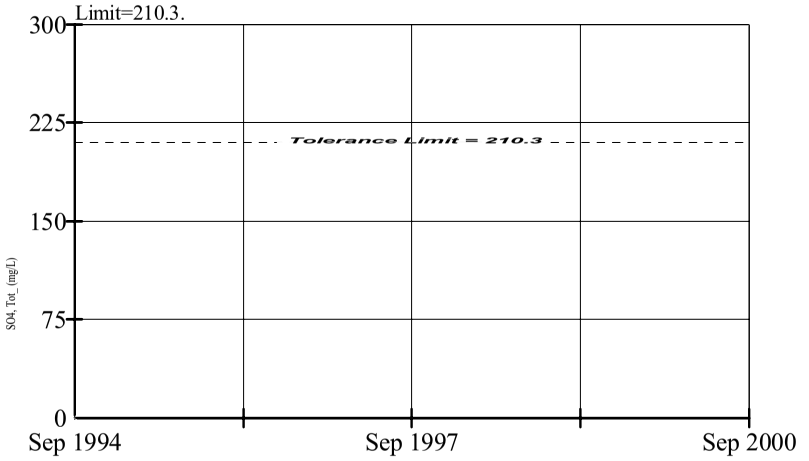


95% coverage. Background Data Summary: (based on ln(x) transformed data) Mean=-0.818, Std. Dev=0.7266, 0% nds, 28 obs. test used: Shapiro Wilk. W Statistic for background data = 0.9722, W Quantile = 0.924. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:33 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-5

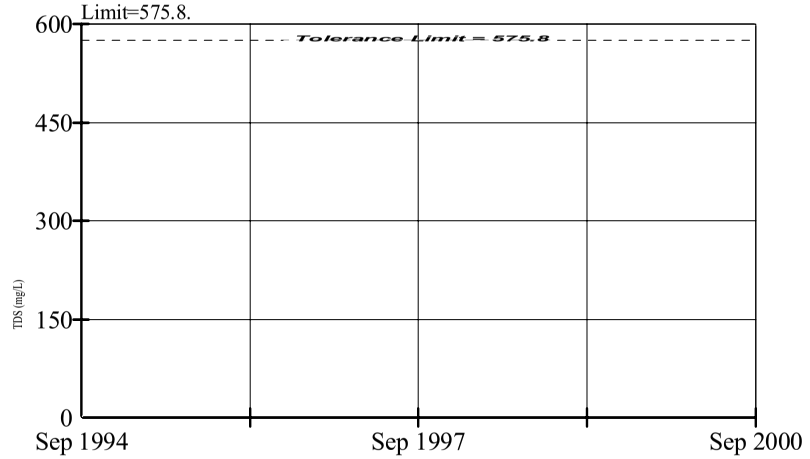


95% coverage. Background Data Summary: Mean=161.8, Std. Dev=21.26, 0% nds, 26 obs. Normality test used: Shapiro Wilk. for background data = 0.9538, W Quantile = 0.92. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:34 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

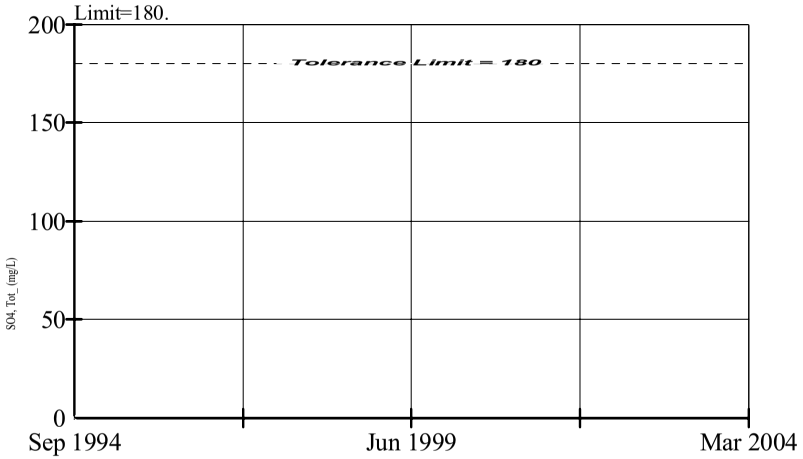
PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-5



95% coverage. Background Data Summary: Mean=508.3, Std. Dev=29.64, 0% nds, 26 obs. Normality test used: Shapiro Wilk. for background data = 0.928, W Quantile = 0.92. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:35 AM Client: Regulator View: data

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-6

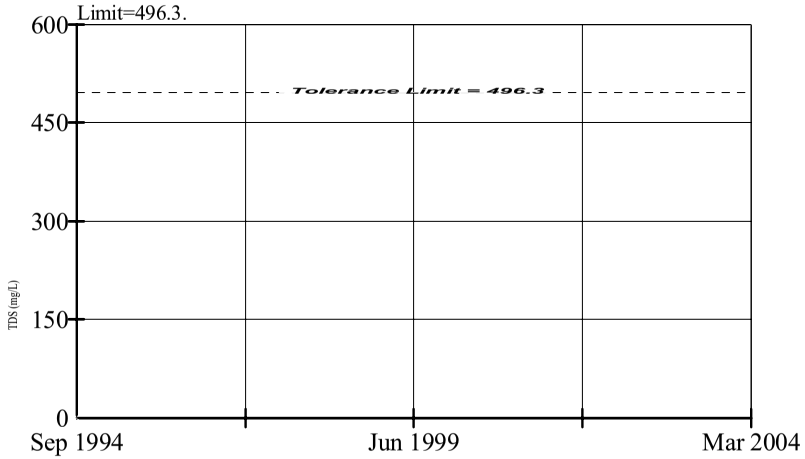


Testwise alpha = 0.1047.
44 background observations. 90.04% coverage at alpha=0.01; 93.55% at alpha=0.05; 98.24% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:38 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-6

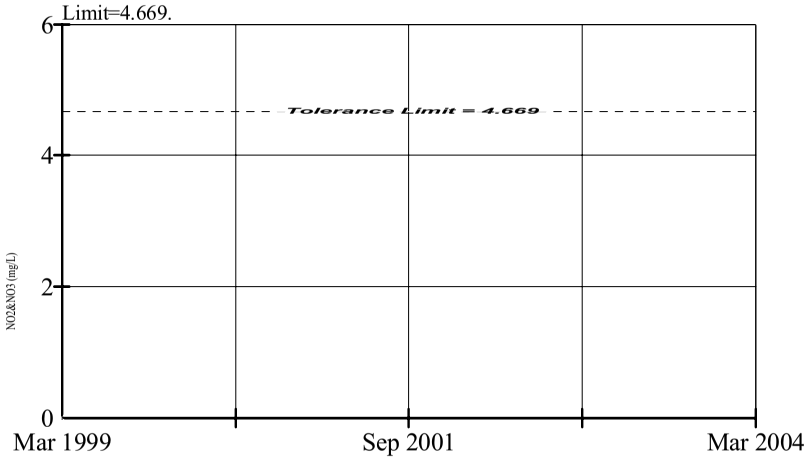


95% coverage. Background Data Summary: (based on cube root(x) transformed data) Mean=7.719, Std. Dev=0.09486, 0% nds,
Normality test used: Shapiro Wilk. W Statistic for background data = 0.9459, W Quantile = 0.945. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:38 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-8

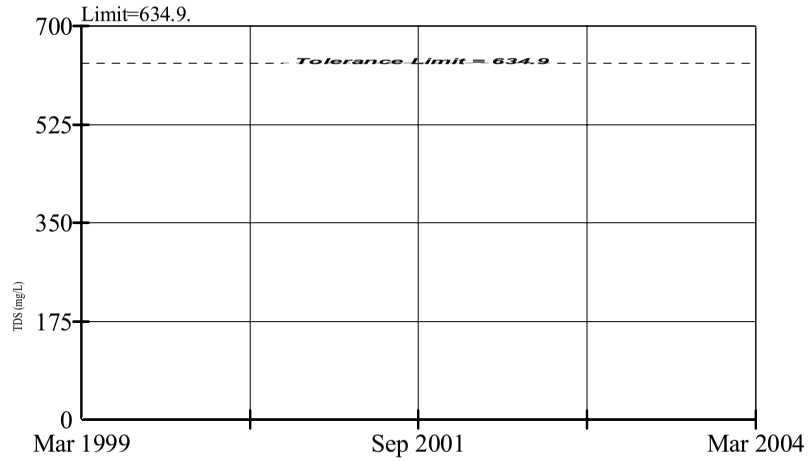


95% coverage. Background Data Summary: Mean=2.803, Std. Dev=0.7701, 0% nds, 19 obs. Normality test used: Shapiro Wilk. Statistic for background data = 0.9619, W Quantile = 0.901. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:41 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-8

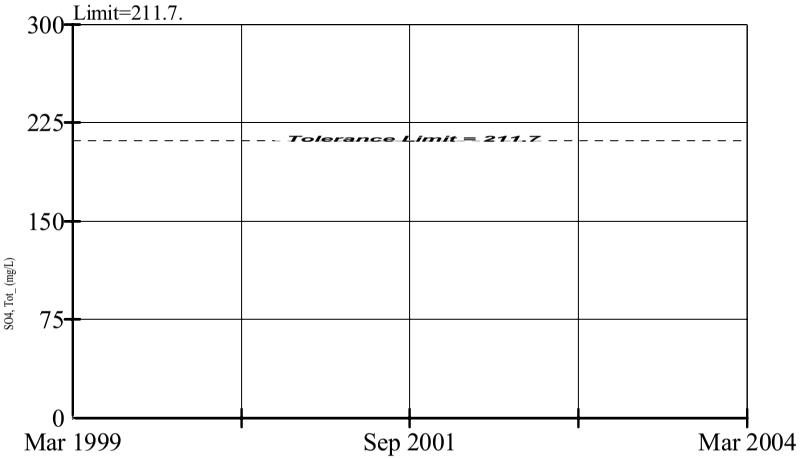


95% coverage. Background Data Summary: Mean=550.6, Std. Dev=35.2, 0% nds, 20 obs. Normality test used: Shapiro Wilk. V for background data = 0.945, W Quantile = 0.905. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:44 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-8

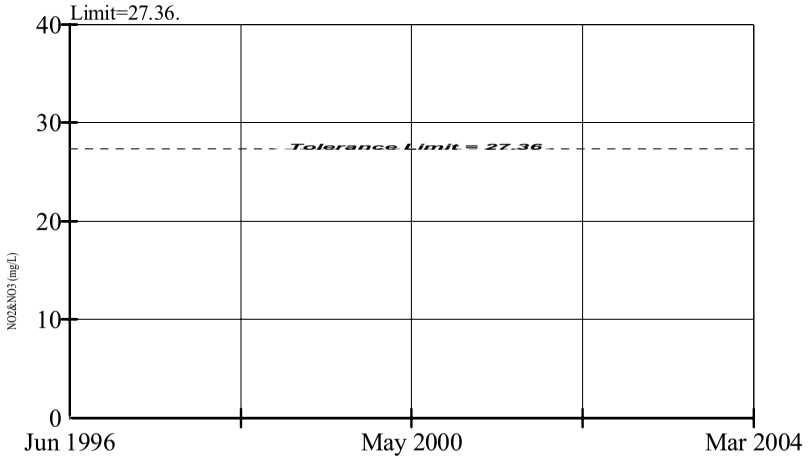


95% coverage. Background Data Summary: Mean=167.4, Std. Dev=18.5, 0% nds, 20 obs. Normality test used: Shapiro Wilk. V for background data = 0.9362, W Quantile = 0.905. Testwise alpha = 0.05.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:43 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-12

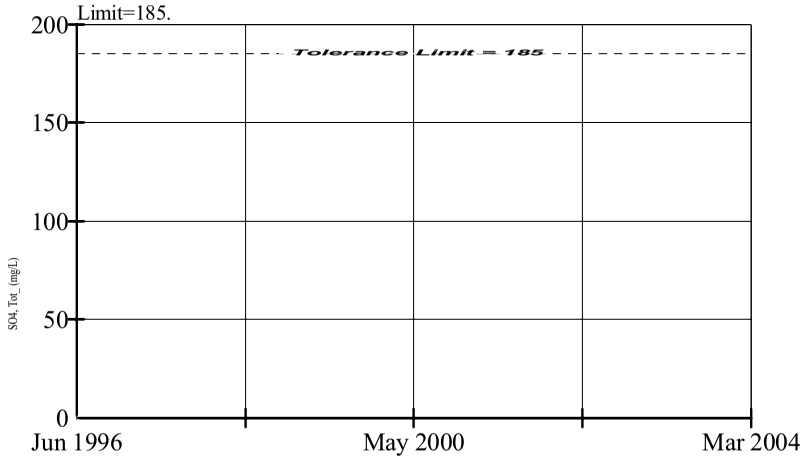


95% coverage. Background Data Summary: (based on square root(x) transformed data) Mean=3.999, Std. Dev=0.5726, 0% nds, Testwise alpha = 0.1424.
Normality test used: Shapiro Wilk. W Statistic for background data = 0.9607, W Quantile = 0.936. Testwise alpha = 0.05.

Constituent: NO2&NO3 (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:55 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

NON-PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-12

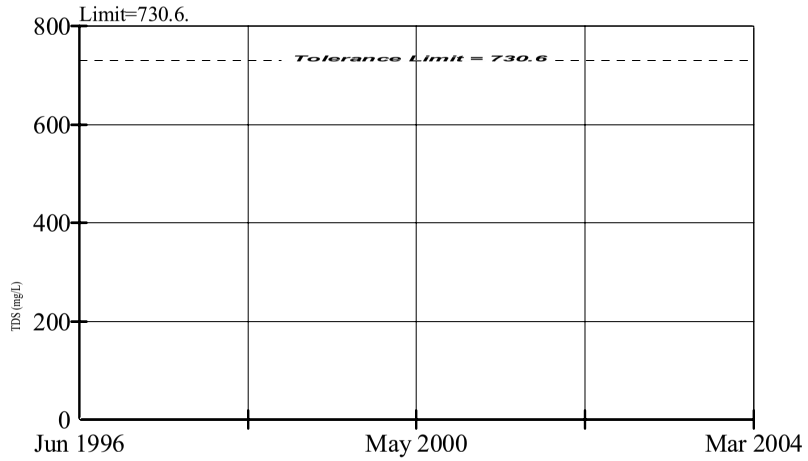


38 background observations. 88.48% coverage at alpha=0.01; 92.38% at alpha=0.05; 98.24% at alpha=0.5.
Non-P test used in lieu of Parametric Intrawell Tolerance Limit after ladder of powers failed to adequately normalize data.

Constituent: SO4, Tot_ (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:55 AM Client: Regulator View: data

v.8.5.09. For regulatory purposes only. CAS# n/a EPA m.a. 0.05

PARAMETRIC INTRA-WELL TOLERANCE LIMIT
LF-12



95% coverage. Background Data Summary: Mean=501.5, Std. Dev=107, 0% nds, 38 obs. Normality test used: Shapiro Wilk. W
for background data = 0.9738, W Quantile = 0.938. Testwise alpha = 0.05.

Constituent: TDS (mg/L) Facility: Landfill X Data File: LFOOT3
Date: 5/17/04, 11:56 AM Client: Regulator View: data

APPENDIX D--RESPONSE TO COMMENTS

The Department received comments on the proposed permit from Kinross Gold Corporation, the Center for Science in Public Participation, and the Okanogan Highlands Alliance. The following pages contain the comment letters, and the Department's response to each comment.